
COMPREHENSIVE PLANNING APPROACH AND PROCESS

BASE COMPREHENSIVE PLANNING

U.S. AIR FORCE / DIRECTORATE OF ENGINEERING AND SERVICES

SEPTEMBER 1989

COMPREHENSIVE PLANNING APPROACH AND PROCESS

Prepared for: U.S. Air Force Directorate of Engineering and Services and Dept. of the
Army HQ U.S. Army Corps of Engineers

Prepared by: EDAW, Inc., 3475 Lenox Road, Suite 100, Atlanta, GA 30326

SEPTEMBER 1989

Table of Contents

	<u>Page</u>
Chapter 1. Introduction	
A. Purpose of this Bulletin/Manual	1-1
1-1. Overview of Comprehensive Planning	1-1
1-2. Benefits of Comprehensive Planning	1-1
B. How to Use This Bulletin/Manual	1-2
1-3. Who Should Read	1-2
1-4. Contents of the Bulletin/Manual	1-3
1-5. Terminology	1-4
C. What is the Base Comprehensive Plan/Master Plan?	1-5
1-6. Planning for the Military Installation	1-5
1-7. The Comprehensive Planning Process	1-6
1-8. The Comprehensive Plan Product	1-8
1-9. Organizing for Planning	1-8
1-10. The Component Plan Approach.....	1-9
D. Benefits of Planning and Consequences of Not Planning: Why Prepare a Comprehensive Plan?	1-12
1-11. Investing in the Future	1-12
Chapter 2. Approach to Comprehensive Planning	
A. The Military Community	2-1
2-1. Comparison to Civilian Community	2-1
2-2. The Natural Environment	2-2
2-3. The Built Environment	2-3
2-4. The Sociocultural Environment	2-3
B. The Surrounding Civilian Community	2-4
2-5. Good Neighbors	2-4
2-6. Adjacent Land Uses	2-4
2-7. Environmental Links	2-5
2-8. Infrastructure Links.....	2-6
2-9. Socioeconomic Links	2-7

Table of Contents (continued)

	<u>Page</u>
C. Principles of Planning	2-8
2-10. Decision-making Aid	2-8
2-11. Innovation	2-8
2-12. Comprehensiveness	2-8
2-13. Flexibility	2-9
2-14. Responsiveness	2-9
2-15. Achievability	2-9
D. The Component Plans	2-11
2-16. Elements in Common	2-11
2-17. The Natural Environment	2-11
2-18. The Built Environment	2-12
2-19. The Sociocultural Environment	2-13
Chapter 3. The Planning Process	
A- Identification	3-1
3-1. Setting the Foundation for Planning	3-1
3-2. Mission	3-1
3-3. Identification of Plan Elements and Study Areas to be Considered	3-1
3-4. Goals and Objectives	3-2
3-5. Existing Conditions	3-8
B. Evaluation	3-11
3-6. Opportunities and Constraints	3-11
3-7. Alternative Plans	3-13
C. Implementation	3-18
3-8. Developing the Plan	3-18
3-9. Programming Documents	3-20
Chapter 4. Plan Presentation	
A. Importance of High Quality Presentation	4-1
4-1. "Selling" the Plan	4-1
4-2. Narrative	4-1
4-3. Graphics	4-2
4-4. Briefing	4-3
B. Updating the Plan	4-4
4-5. Keeping Up With Changes	4-4

Table of Contents
(continued)

	<u>Page</u>
Chapter 5. Staffing to Prepare and Maintain Comprehensive Plans	
A. In-house Planners and Support Personnel	5-1
5-1. Commitment of Staff	5-1
B. Contractor Assistance.....	5-3
5-2. Contractor Selection and Qualifications	5-3
5-3. Pre-negotiation Conference	5-6
5-4. Fee Negotiation	5-6
5-5. Project Schedule	5-7
5-6. The Pre-planning Meeting	5-8
5-7. Review of Submittals	5-8
C. How to Use the Statement of Work	5-9
5-8. Installation Personnel	5-9
5-9. Contractors.....	5-10
5-10. Effective Planning for Each Installation	5-11
Bibliography	A-1

List of Figures

	<u>Page</u>
1-1 Planning Process	1-1
1-2 Contents of Bulletin: Introduction	1-3
1-3 Terminology	1-4
1-4 Scales of comprehensive planning	1-6
1-5 Interaction of planning process	1-7
1-6 Interaction of planning process with local and regional governmental bodies	1-7
1-7 Comprehensive planning participants	1-8
1-9 Constructing facilities according to a plan saves money	1-10
 2-1 Contents of Bulletin: Approach	 2-1
2-2 Natural, built and sociocultural environments	2-2
2-3 Component plans address all three environments	2-2
2-4 Installation affects the surrounding community	2-4
2-5 Environmental links to the civilian community	2-5
2-6 Unique installation characteristics	2-8
2-7 Relationships of component plans	2-10
 3-1 Contents of Bulletin: Process	 3-1
3-2 Planning Process: Identification	3-2
3-3 Goals, objectives, and policies	3-2
3-4 Different components may require study areas with different boundaries	3-10
3-5 Planning Process: Evaluations	3-11
3-6 Combined Constraints Map - Ft. Alpha	3-11
3-7 Alternative plans	3-13
3-8 Land use alternatives evaluated with the Opportunities/Constraints Map	3-17
3-9 Planning Process: Implementation	3-18
3-10 Long Range Facilities Development Plan sample	3-19
3-11 Installation project funding flowchart	3-20
 4-1 Contents of Bulletin: Presentation	 4-1
4-2 Plan overview	4-2
4-3 Cover provides first impression	4-2
4-4 Graphics help break up text	4-3
4-5 Planning Process: Updating the Plan	4-4
 5-1 Contents of Bulletin: Staffing	 5-1
5-2 Participants in the planning process	5-2
5-3 Planning process diagram	5-3
5-3 Planning process diagram	5-4
5-3 Planning process diagram	5-6
5-4 Submittal schedule sample	5-7
5-3 Planning process diagram	5-7
5-3 Planning process diagram	5-8

CHAPTER 1. INTRODUCTION

Chapter 1

Introduction

A. PURPOSE OF THIS BULLETIN/MANUAL

1-1. Overview of Comprehensive Planning. The purpose of this document is to provide an overview of the comprehensive planning process and a general guide to the preparation of comprehensive plans for U.S. Army and Air Force installations. The preparation of these plans is governed by Army Regulation 210-20, Master Planning for Army Installations, and Air Force Regulation 86-4, Base Comprehensive Planning. These regulations mandate the preparation of comprehensive plans for all installations. The installation commander is responsible for the preparation of the Plan at each installation; the Plan is best understood as a statement on behalf of the installation about how the installation will develop and respond to command and local goals and mission objectives. This bulletin/manual describes further the processes and products of planning and describes the elements and conditions that lead to the production of effective comprehensive plans (see Figure I-1). The bulletin provides an introduction and general guide to the comprehensive planning process; it is intended to be used in concert with appropriate regulations as well as additional bulletins/manuals covering specific component plans.

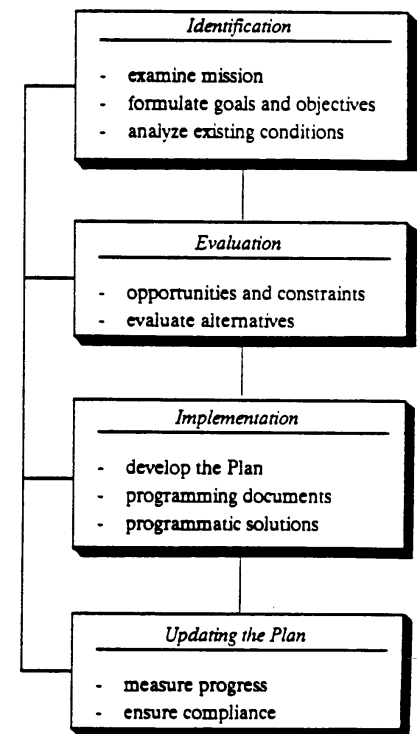


Figure I-1
Planning process

- 1-2. Benefits of Comprehensive Planning.** In addition to providing a guide for the preparation of comprehensive plans, this bulletin/manual describes how comprehensive planning is an essential ingredient in achieving efficient mission performance, economic and efficient resource management, and a high quality of life at all installations. **The value of a comprehensive plan is that it takes into account and balances environmental, land use, operational, engineering, transportation, safety and security, design and quality of life issues and requirements in determining the future physical development of the installation.** The benefits of comprehensive planning are described, as well as the importance of the participation of commanders in the planning process and the planner's role as monitor and salesperson for the comprehensive plan.

***THE
COMPREHENSIVE
PLAN
BALANCES ISSUES
AND
REQUIREMENTS***

B. HOW TO USE THIS BULLETIN/MANUAL

- 1-3. Who Should Read?** This bulletin/manual is intended for all persons who will be involved in the preparation of installation comprehensive plans. The document should be read by in-house personnel overseeing plan preparation as well as contractors who may actually prepare the plan. Installation personnel and contractors should read the bulletin/manual to gain a general overview of the comprehensive planning process as it is applied at U.S. Air Force and Army installations. Planners should use the bulletin/manual as a guide to planning at specific installations; the processes and procedures suggested in this document must be refined and adapted to respond to specific conditions and needs at each particular installation.

***REFINE AND
ADAPT
PROCEDURES***

1-4. Contents of the Bulletin/Manual. This document contains the following chapters diagrammed in Figure 1-2:

- **Chapter 1. Introduction.** This chapter includes definitions of comprehensive planning, a brief overview of the planning process and products, a discussion of the organizational structure needed to prepare a comprehensive plan, and a discussion of the benefits of planning and consequences of not planning.
- **Chapter 2. Approach to Comprehensive Planning.** This chapter includes discussions of the planning environments, relationship to the surrounding civilian community, principles of planning as they relate to military installations, and a brief overview of the component plan approach.
- **Chapter 3. The Planning Process.** This chapter describes the three-phase planning process for military installations. The three steps are:
 - **Identification** of mission, goals, and existing conditions.
 - **Evaluation** of opportunities, constraints and alternative solutions.
 - **Selection and implementation** of a preferred alternative.
- **Chapter 4. Plan Presentation.** The importance of high-quality presentation is discussed, as well as procedures for updating the plan.

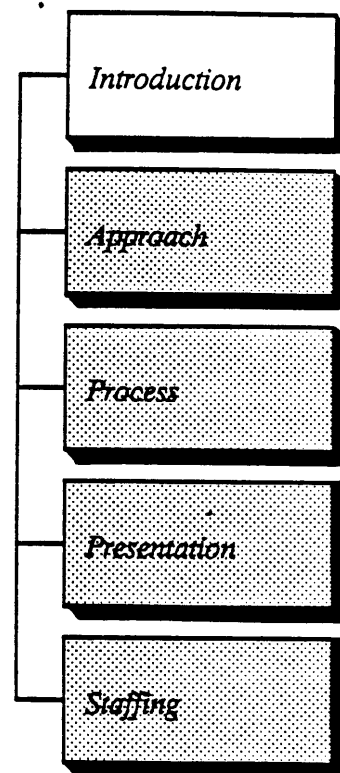


Figure 1-2

Contents of Bulletin: Introduction

- **Chapter 5. Staffing to Prepare and Maintain Comprehensive Plans.** This chapter describes the on-installation organizational structure needed to prepare a comprehensive plan, how to manage a contract for the preparation of a comprehensive plan, and how to use the Statement of Work.

1-5. Terminology. Non-specific military terms have been used wherever possible in this document. In some cases, generic terms were devised to avoid using terms specific to the Army or Air Force. Please refer to the table below (Figure 1-3) for the specific Army and Air Force definitions of these generic terms.

GENERIC	ARMY	AIR FORCE
installation	<i>installation</i>	<i>base</i>
the Plan (product)	<i>the Installation Comprehensive Plan</i>	<i>the Base Comprehensive Plan (BCP)</i>
comprehensive planning (process)	<i>Installation Comprehensive Planning</i>	<i>Base Comprehensive Planning</i>
the Engineer	<i>Director of Engineering and Housing (DEH)</i>	<i>Base Civil Engineer (BCE)</i>
major command	<i>MACOM</i>	<i>MAJCOM</i>
Military Construction (MILCON)	<i>Military Construction Army (MCA)</i>	<i>Military Construction Project (MCP)</i>

Figure 1-3
Terminology

C. WHAT IS THE BASE COMPREHENSIVE PLAN?

1-6. Planning for the Military Installation. The military installation is a dynamic community that encompasses almost all land use and social characteristics of a small civilian community. A community is primarily a social organization and secondarily a collection of buildings. All communities are comprised of natural, built, and sociocultural environments. The Base/Installation Comprehensive Plan (the Plan) is a **process** that identifies long-term priorities and goals of the installation and translates those priorities and goals into concrete land use, facility, and related infrastructure objectives and policies, as well as natural resource protection and efficient use of all resources. The Plan is the primary mechanism to relate the installation mission to plans for facilities, programs, projects and policies required within installation boundaries to support the military community. The Plan is also a **product** that portrays those long-term priorities, goals, objectives and policies. The comprehensive plan should not be confused with a "plan" as the term is commonly used in architecture and engineering to refer to a static, two-dimensional drawing of a system or building. Comprehensive planning should be

***THE
COMPREHENSIVE
PLAN
IS A
PROCESS
AND A
PRODUCT***

viewed as occurring at three different levels or scales, as illustrated in Figure 1-4. The military installation influences and is influenced by **the surrounding region**. The relationship between planning for the civilian community and planning for the military installation is discussed in Sections 2-5 through 2-9. The comprehensive plan addresses planning at **the installation level**. **The site level** is addressed in the Small Area Plans/Area Development Plans portion of the Long Range Facilities Development Plan, Project Books/Project Development Brochures, and DD Form 1391. (See the Long Range Facilities Development Planning Bulletin/Manual and Installation Design (Army TM 5-803-5, Air Force Manual 88-43) for a detailed discussion of planning at the site level.) Planning at each level is best accomplished within the context of the other two levels.

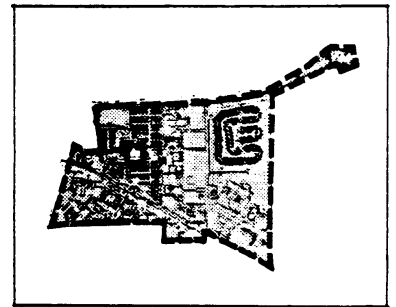
1-7. The Comprehensive Planning Process.

- a. The planning process consists of three major steps:
 - Identification of existing conditions, opportunities and constraints, goals, and needs
 - Development and evaluation of alternative plans
 - Implementation of the preferred alternative.

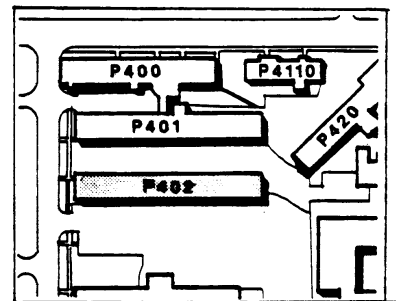
These steps are described in Chapter 3. The steps should be viewed as part of a fully integrated iterative planning process, wherein each step leads to the next step, while each step also feeds back information to the previous phase, resulting in a constantly redefining and improving process.



region



installation



site

Figure 1-4

Scales of comprehensive planning

b. The internal planning process fits into several larger processes. The planning process is part of the overall decision-making process of the command structure at the installation level, as well as the military construction (MILCON) approval, programming, and funding processes. The comprehensive planning process generally relates to installation-level planning by the military. Operational planning addresses manpower, logistics and equipment needs, while strategic planning represents the overall service-wide approach to the use of all resources, including installations, personnel, and property. Figure 1-5 shows the interaction of these processes.

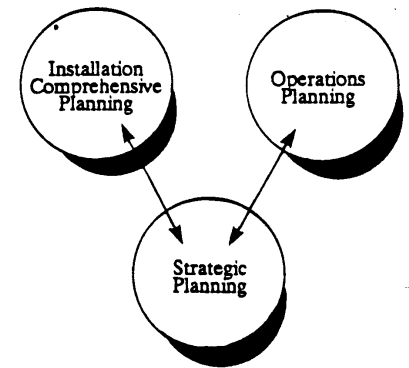


Figure 1-5
Interaction of planning processes

c. The installation comprehensive planning process is also closely related to the plans of local and regional governmental bodies. Figure 1-6 illustrates the interaction of the installation comprehensive planning process with other processes in the civilian communities.

d. An additional process is the contracting process for the preparation of a comprehensive plan by a consultant; this process is described in Chapter 5.

e. Managing the implementation of the plan is one of the most crucial phases of the planning process. A plan is successful only if it is successfully implemented. The Planning Board/Facilities Board must carefully monitor all facility programming and siting to ensure compliance with the Plan. The implementation process is described in Sections 3-7 through 3-9.

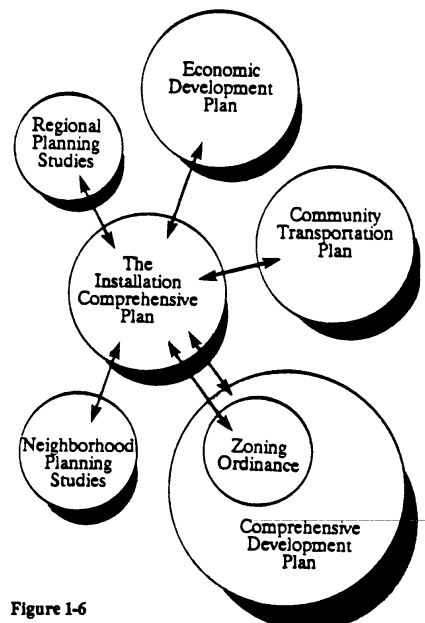


Figure 1-6
Interaction of planning process with local and regional governmental bodies

1-8. The Comprehensive Plan Product. The comprehensive plan can also be viewed as a product that sets forth and makes a strong case for the future vision of the installation. The importance of a high-quality presentation cannot be overemphasized: The plan narrative and graphics must "sell" the plan to commanders, the installation community, and the surrounding civilian community. The narrative should be written clearly and succinctly, with an accompanying executive summary or plan overview to be used by the installation commander and others as a public relations document. The graphics support the text and portray existing conditions at the installation as well as future plans. Guidelines for narrative and graphics preparation are presented in Chapter 4.

1-9. Organizing for Planning.

a. The success of a planning effort depends to a large degree on the meaningful participation of all appropriate parties (see Figure 1-7), as well as the existence of the proper structure for implementing and updating the Plan in years subsequent to the Plan's completion.

b. The participation of the Planning Board/Facilities Board (the Board) is essential to the preparation of a plan that has the support of the command structure needed to ensure implementation. If the Board is too large (i.e., greater than 10 persons) for meaningful participation in meetings, the chairman of the Board may find it useful to appoint a smaller working task force that will be responsible for detailed monitoring of activities related to the comprehensive planning process. The task force should be comprised of representatives of key installation organizations who have a good knowledge of existing conditions at

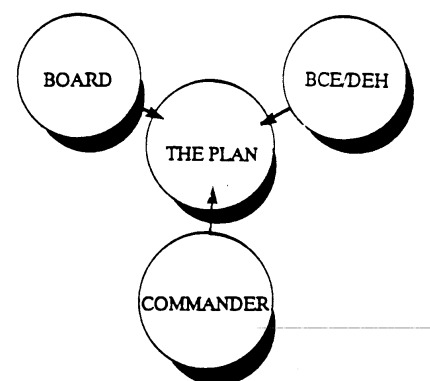


Figure 1-7
Comprehensive planning participants

the installation as well as future plans and needs of the varying organizations. Major tenant organizations should be represented. Presentations should be made to the full Board at important milestones in the process.

c. The installation commander is one of the most important participants in the comprehensive planning process. The participation of the commander is essential; if involved throughout the process, the commander will feel a sense of "ownership" of the Plan and give it the support necessary for implementation. The commander should officially endorse the Plan and encourage subsequent commanders to use the Plan as a tool to perform the installation mission. (A letter of endorsement displayed prominently in the plan document illustrates the commander's support to the entire community.) Following the Plan through the terms of successive installation commanders will ensure the successful stewardship of military resources throughout changing times and personalities.

d. The Engineer appoints a staff member who will be the manager of the comprehensive planning process. The manager of the planning process should be a professional planner. If there is not a professional planner at the installation, the person who deals most directly with planning issues and decisions and who has a close familiarity with installation facilities will be designated as the project manager.

***THE COMMANDER
IS AN
IMPORTANT
PARTICIPANT***

1-10. The Component Plan Approach.

a. The comprehensive plan is prepared as a series of components that address various aspects of installation development. (See Figure 2-3 on page 2-2.) The component plans are:

- Natural Resources Plan
- Environmental Quality Protection Plan
- Land Use Plan
- Airfield/Air Operations Plan
- Air Installation Compatible Use Zone/Installation Compatible Use Zone (AICUZ/ICUZ) Plan
- Utilities Systems Plan
- Communications Plan
- Transportation Plan
- Energy Plan
- Architectural Compatibility Guidelines and Landscape Development Plan/Installation Design Guide
- Long Range Facilities Development Plan
- Fire Protection Plan
- Contingency Plan/Mobilization Plan
- Physical Security Plan
- Quality of life Programs
- Other plans, as appropriate

b. All of these components may not be appropriate or desirable for all installations. Other specialized component plans may also be desirable or necessary, such as a Cultural Resources Plan. The preparation of all component plans at the same time is desirable but often cost-prohibitive. If an installation cannot afford to prepare all plans at one time, the Land Use Plan, Transportation Plan, and Long Range Facilities Development Plan should be the minimum package for initial development. Each of these plans is heavily dependent upon and helps define the other two plans (Figure 1-8).

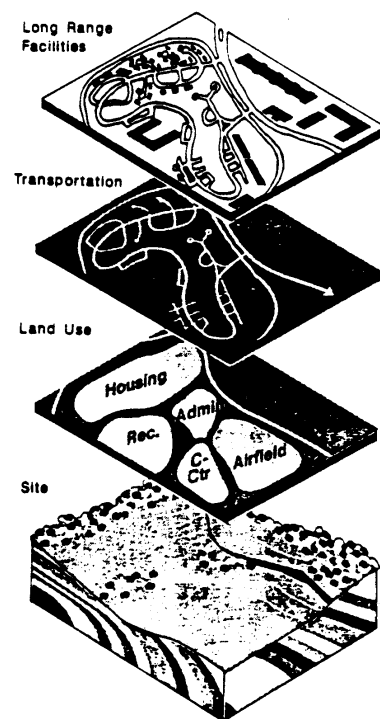


Figure 1-8
Minimum package for initial development

c. The Land Use and Transportation Plans go hand in hand; the policies of one define the patterns of the other. For a Land Use Plan to be effective, a companion Transportation Plan must show how people and materials will travel among the designated land use areas. In addition, problems that are often perceived as transportation or traffic problems may actually be land use problems. For example, conflicts between Commissary traffic and delivery trucks to and from a Supply area probably stem from poor land use and facility siting decisions, rather than inadequacies of the transportation system.

d. The Long Range Facilities Development Plan is the implementation tool necessary for the realization of the Land Use and Transportation Plans. These three, therefore, form the core of a comprehensive plan.

e. Various bulletins/manuals have been prepared to assist in the preparation of each component plan. In addition, this Comprehensive Planning Approach and Process Bulletin/Manual provides an overall guide for the preparation of the comprehensive plan, and the Comprehensive Planning Data Sources and Application Bulletin/Manual includes guidance for research and application of data, including computer displays and manipulations. These bulletins are not intended for use as scopes of work or detailed task descriptions; they provide general introductions and guidelines for use in the preparation of the comprehensive plan. The missions and physical and social characteristics of military installations vary so widely that each plan must be viewed as a unique response to these needs and characteristics. The bulletins/manuals are not intended to provide a checklist of tasks to be completed, therefore; they are intended to stimulate creative planning techniques and processes at each installation.

**D. BENEFITS OF PLANNING AND CONSEQUENCES
OF NOT PLANNING: WHY PREPARE A
COMPREHENSIVE PLAN?**

1-11. Investing In the Future.

a. A comprehensive plan should be viewed as an investment in the future of the installation. Developing and adhering to a comprehensive plan ensures that facilities are programmed and located in the context of long range goals and objectives for the installation.

- Without a comprehensive plan, commanders, engineers, the installation community, and the general public all may have varying concepts of the future of the installation; this leads to chaos in facility programming and siting.
- Without a comprehensive plan, facilities are often sited by the "vacant lot" method, and land use incompatibility, inadequate transportation and utilities, and functional inefficiency may result.
- Without a comprehensive plan, short-sighted solutions to current problems may rule out the most appropriate solution to a long-term need.
- Without a comprehensive plan, installations may develop in such a way as to become poor neighbors to the civilian community and poor stewards of the environment.
- Without a comprehensive plan, priorities and concepts about the future are likely to change with each change in command, as each commander wants to "make his mark" on the installation. Inefficient, unattractive installations are the result.

***THE COMPREHENSIVE
PLAN PROVIDES
LONG-RANGE
SOLUTIONS***

b. The comprehensive plan can best be viewed as insurance that the dollars spent every year in MILCON funds are spent properly; a \$20-million facility that is sited in the wrong place in pursuit of short-term goals is a mistake that an installation, its people, and its neighbors all will have to live with for 20 to 30 years or longer. In times of dwindling resources, investing in planning to spend those resources wisely is more important than ever (Figure 1-9). The cost of inefficiencies resulting from lack of planning -- in terms of both time and dollars -- far outweighs the initial cost of planning for efficient, orderly, attractive installations.

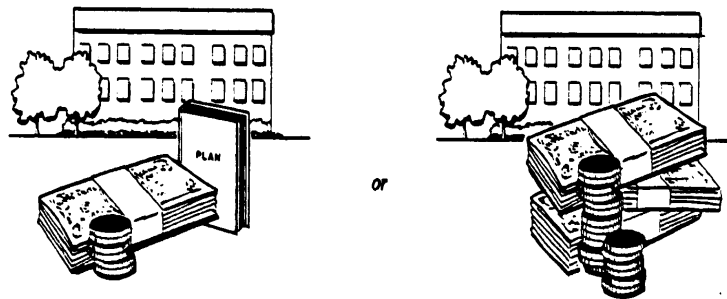


Figure 1-9

Constructing facilities according to a plan saves money

CHAPTER 2. APPROACH TO COMPREHENSIVE PLANNING

Chapter 2

Approach to Comprehensive Planning

A. THE MILITARY COMMUNITY

2-1. Comparison to Civilian Community.

a. The military community is similar to but also different from a comparably sized civilian community. The similarities arise from the broad range of activities that take place at the military installation: office, commercial, service, industrial and recreation land uses on military installations are all analogous to those land uses in a small town. Military installations, particularly those in remote rural areas, can be viewed as self-contained communities at which all of the inhabitants' day-to-day needs are met. In this regard, the goals of a comprehensive plan are generally the same as the goals of a plan for a civilian community: to allocate resources efficiently, protect the natural environment, and enhance the quality of life of the men, women and children who live and work in the community. (See Figure 2-1.)

b. Despite these similarities, the military community differs from the civilian community in one essential aspect. The military community owes its existence to and is united around one central purpose: to carry out the mission of the installation. This unity of purpose results in the formulation of military communities that are physically and socially more homogeneous and thus more cohesive than their civilian counterparts. In this regard, military communities most closely resemble a civilian "company town;" everyone works, shops, and socializes largely within the confines of the installation's borders. Planners must take into account these unique social characteristics in the development of comprehensive plans for military installations.

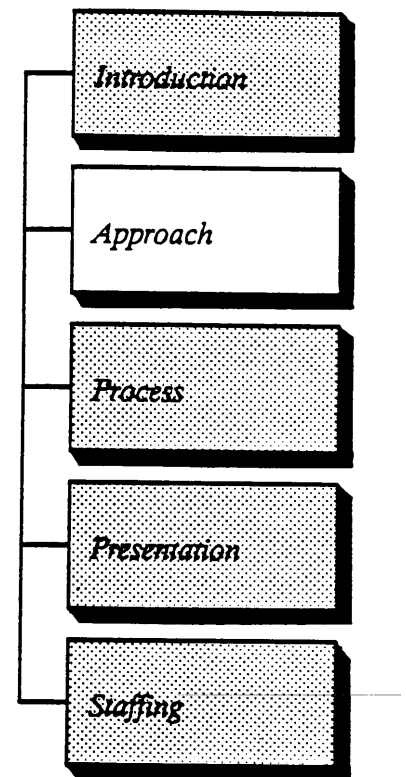


Figure 2-1

Contents of Bulletin: Approach

c. The military community is comprised of three environments: **natural, built, and sociocultural** (see Figure 2-2). The three environments are closely related. The **natural environment** is the context within which the **built environment** is constructed to serve the activities, institutions and relationships that comprise **the sociocultural environment**. Figure 2-3 illustrates the component plans as they relate to the three environments.

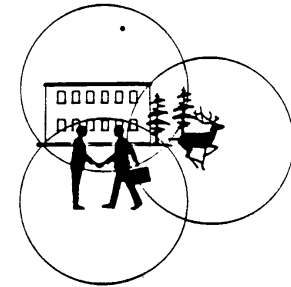


Figure 2-2

Natural, built and sociocultural environments

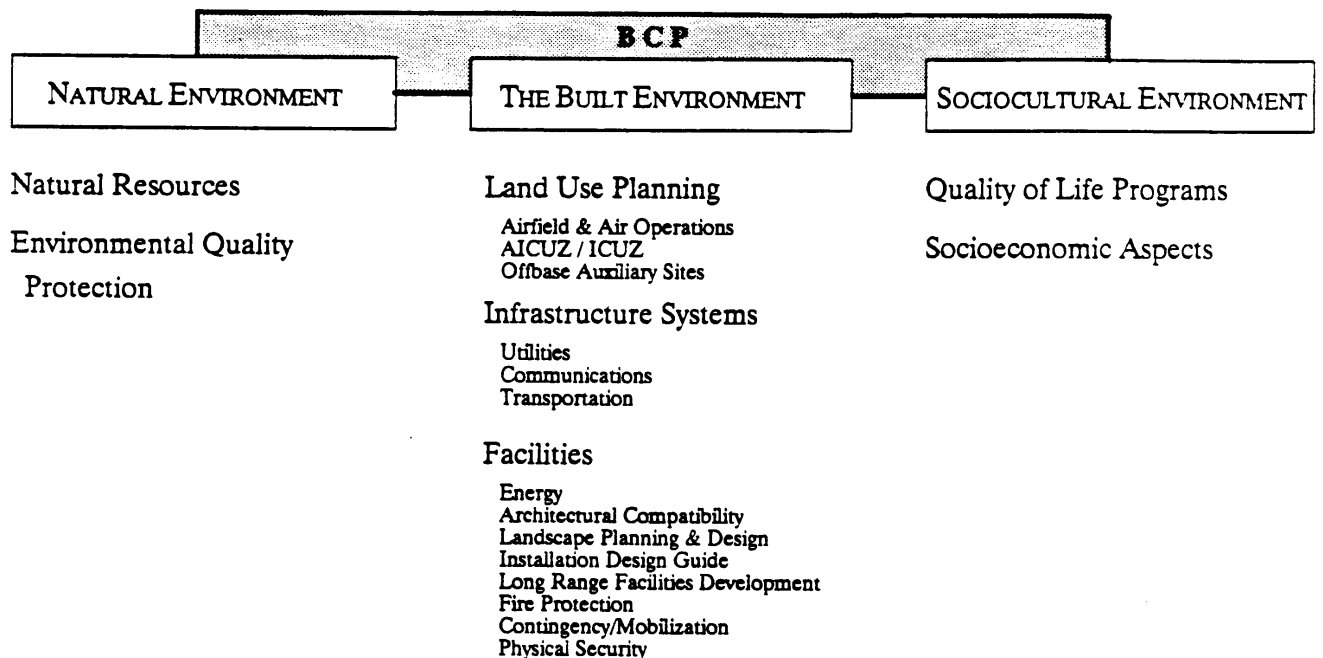


Figure 2-3

Component plans address all three environments

2-2. The Natural Environment.

a. The natural environment is comprised of air, water and land resources. The comprehensive plan outlines how these resources will be used efficiently and effectively in support of the installation mission. At the same time, the Plan provides for responsible stewardship and conservation of all natural resources. The comprehensive plan should also take maximum advantage of natural resources to enhance the quality of life for the installation community.

b. The component plans that are directly related to the natural environment are the Natural Resources Plan and the Environmental Quality Protection Plan.

2-3. The Built Environment.

a. The built environment includes all elements that are constructed in support of the installation mission and the well-being of the community. It includes buildings, spaces, other facilities, transportation systems, utilities and all other elements that have been introduced into the natural environment by humans. The comprehensive plan seeks to provide a built environment of the highest possible quality, one that enhances mission productivity and quality of life while minimizing disturbance to the natural environment and serving the sociocultural environment.

b. The built environment is addressed specifically in the Land Use, Airfield/Air Operations, Air Installation Compatible Use Zone/Installation Compatible Use Zone (AICUZ/ICUZ), Communications, Utilities Systems, Transportation, Architectural Compatibility Guidelines and Landscape Development/Installation Design Guide, Long Range Facilities Development, Fire Protection and Contingency/Mobilization, and Physical Security component plans.

2-4. The Sociocultural Environment. The sociocultural environment is comprised of those institutions, systems, activities, and relationships that affect and characterize the day-to-day lives of the members of the community. These sociocultural elements are supported and to some extent dictated by the natural and built environments, but their nature is more closely linked to the mission, goals, policies and programs of the installation. The Quality of Life Plan specifically addresses the sociocultural environment, but all component plans deal with sociocultural issues to some degree.

B. THE SURROUNDING CIVILIAN COMMUNITY

2-5. Good Neighbors. The military installation clearly affects and is affected by the surrounding civilian community (see Figure 2-4). Noise impact, addressed in the AICUZ/ICUZ component plan, is the most commonly considered element of the military installation that has a direct effect on the surrounding community. The natural, built and sociocultural environments of the military community, however, are linked to those environments "outside the fence," and all component plans must address how the installation affects and is affected by these outside elements. A strong and continually active relationship between the installation and the local jurisdiction(s) is essential if the installation is to be a good neighbor to the civilian community. Close working relationships are desirable at the staff planning level as well as between installation commanders and mayors (or their equivalents).

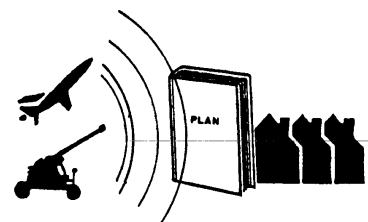


Figure 2-4

Installation affects the surrounding community

2-6. Adjacent Land Uses. Land uses adjacent to the installation can contribute to or detract from the overall installation image and character. For example, low-rent strip commercial development adjacent to an installation entrance has a negative effect on the general public's perception of the installation character and population. The Land Use Plan for the installation must address existing and desirable adjacent land uses. Installation planners and commanders should work closely with their counterparts in the civilian community to encourage desirable land uses adjacent to installation boundaries. This is especially important if undeveloped land is adjacent to the installation.



Figure 2-5
Environmental links to the civilian community

2-7. Environmental Links.

a. Environmental links between military and civilian communities include:

- Impacts of noise generated by the installation on the surrounding community
- Noise, odors or other negative impacts on the installation generated by adjacent civilian land uses
- Natural environmental factors, such as climate, flood plains, or fauna that may wander onto the installation from outside the boundary
- Positive or negative sightlines into and out of the installation.

Environmental links to the civilian community are shown in Figure 2-5 and addressed in the Natural Resources Plan, Environmental Quality Protection Plan, and AICUZ/ICUZ Plan. Close coordination with state, regional and local environmental planners is mandatory in the preparation of these component plans.

b. An example of good cooperation on environmental issues is the Air Force's Joint Land Use Study (JLUS) initiative, under which the Air Force works closely with and assists local communities in incorporating AICUZ recommendations into land use plans and zoning. The purpose of JLUS is to protect local citizens as well as the Air Force installations from the potential negative effects of incompatible development. Through the DoD Office of Economic Adjustment, funds are made available to local communities to help defray the expense of developing plans for implementing land use controls around Air Force bases. Through this program, communities implement plans to disallow residential development in high noise and accident potential areas. Implementation of these plans in turn decreases the potential for community demands on the Air Force to change or curtail flight operations.

2-8. Infrastructure Links.

a. Infrastructure links include transportation, communications, utilities and fire protection.

b. The transportation network on the installation, particularly gate design and operation, often can affect traffic patterns in the civilian community. Conversely, inadequate capacity on surrounding civilian roads can cause congestion on installation roads. Planners must consider these and all off-installation impacts in the development of the Transportation Plan; close consultation with state, regional and local transportation planners is essential.

c. Some installation utility and communications systems are typically linked to civilian utility systems. These connections are described and evaluated in the Utilities Systems and Communications Plans.

d. Cooperative agreements often exist between civilian and military fire departments to ensure the maximum possible fire protection in both communities. Opportunities for such cooperation are described and evaluated in the Fire Protection Plan.

2-9. Socioeconomic Links.

a. Socioeconomic links between military and civilian communities include:

- Impact of military installations on local economies
- Demand for and supply of housing in the civilian community
- Availability of civilian labor for the installation
- Availability of recreational, cultural, and educational resources for use by military personnel and their dependents
- Presence of military installation as incentive for military retirees to locate in community.

b. At a minimum, these impacts should be noted in the background or installation profile section of the comprehensive plan document. These impacts should be understood by installation planners and commanders and their civilian counterparts; documenting and publicizing the benefits of the presence of a military installation in a community will help offset public criticism related to negative impacts. Socioeconomic links are directly addressed in the Quality of Life Plan, but there may be relationships to be considered in all component plans.

**DOCUMENT
BENEFITS OF
INSTALLATION TO
THE COMMUNITY**

C. PRINCIPLES OF PLANNING

2-10. Decision-making Aid. Planning should be viewed as the first step in the process of decision-making on installation development issues. Many decisions are made in establishing the framework for development described in the comprehensive plan; all subsequent decisions regarding installation development are made within the context of that framework.

2-11. Innovation. Comprehensive plans cannot be prepared according to a "checklist" of tasks or criteria to be completed or fulfilled; each installation has unique characteristics, problems and opportunities that call for unique planning solutions. Planners, especially those at the installation, must make a conscious effort to avoid "business as usual" in the preparation of comprehensive plans. Previous poor planning practices have resulted in illogical and inefficient development at many installations, and new plans should not reinforce these undesirable development patterns.

2-12. Comprehensiveness. A truly comprehensive plan addresses all aspects of an installation's development. The component plan approach, described in Section 2-16 below, divides the comprehensive plan into discrete but interrelated components that address all issues and facets of physical development at a military installation. The value of a comprehensive plan is that it takes into account and balances environmental, land use, operational, engineering, transportation, safety and security, design and quality of life issues and requirements in determining the future physical development of the installation.

- *environmental*
- *land use*
- *operational*
- *engineering*
- *transportation*
- *safety and security*
- *design*
- *quality of life*

Figure 2-6

Unique installation characteristics

2-13. Flexibility. The comprehensive plan must be a dynamic and flexible tool that can respond to changes in mission, goals, and priorities at an installation. If changes occur that require a major revamping of the comprehensive plan and its priorities, a new comprehensive plan should be developed to reflect the new conditions, but minor changes can be accommodated within the framework of amendments to the comprehensive plan. Further explanation and procedures for updating the plan are discussed in Chapter 4.

2-14. Responsiveness. The comprehensive plan must respond to mission requirements as well as the stated needs and desires of the entire installation community. The participation of the installation commander and representatives of all users of the Plan including tenant commanders, is essential to the development of a Plan that is responsive and effective.

2-15. Achievability. The Plan must contain realistic, practical recommendations for future development, policies and programs. Army and Air Force installations exist in a real world of limited economic resources and regulations that must be followed. An effective comprehensive plan takes those constraints into account and provides achievable projects, programs and policies that can work within constraints to achieve the goals and objectives of the installation.

***THE PLAN
MUST BE
PRACTICAL***

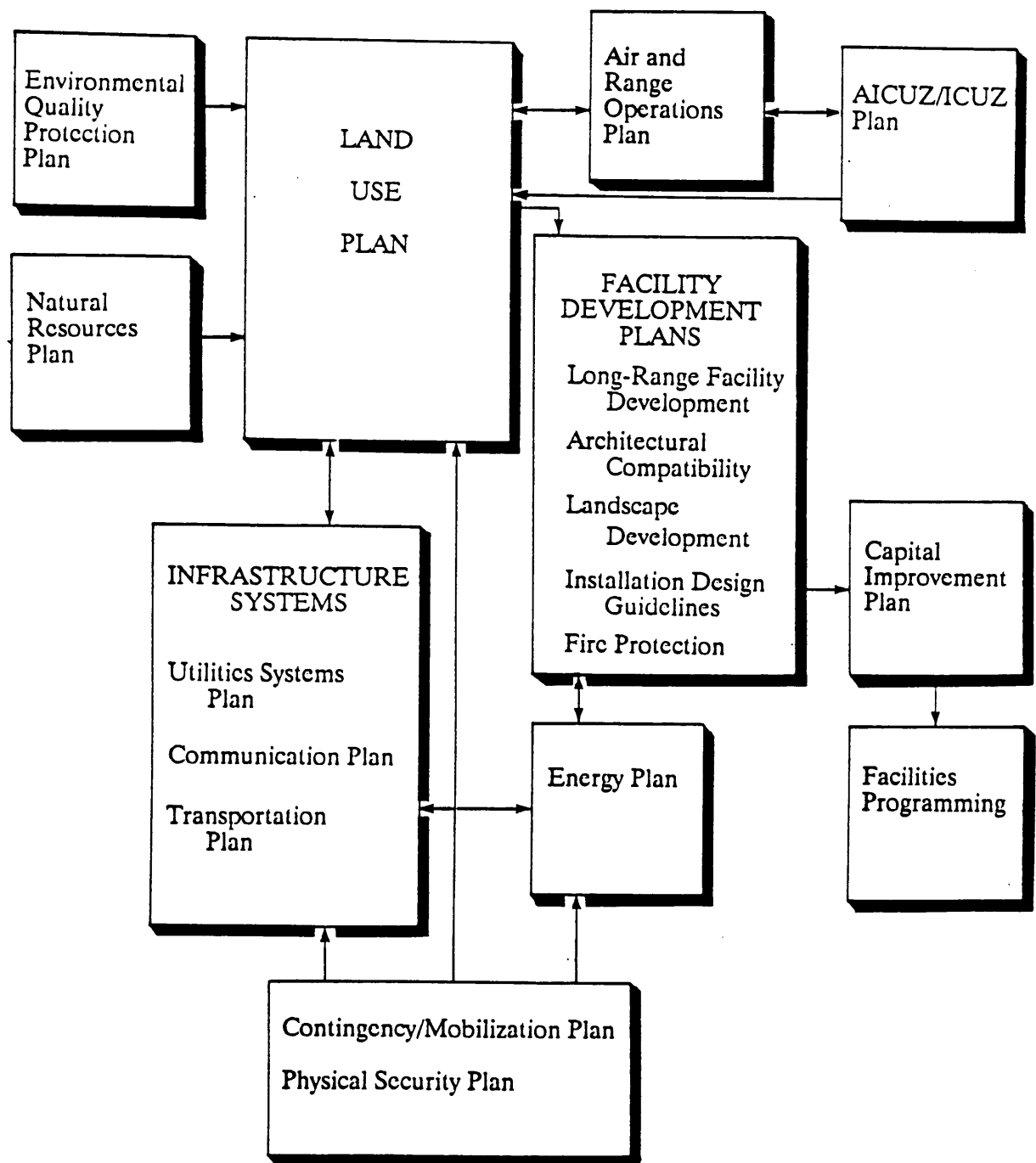


Figure 2-7

Relationships of component plans

D. THE COMPONENT PLANS

2-16. Elements in Common. Component plans address specific functions or programs that contribute to the overall development of the installation. Each plan may encompass one or more programs with specific goals and objectives. Each component plan should include:

- Goals and objectives
- Needs and requirements
- Constraints and opportunities for future development
- Alternatives for development
- Long-range plan for future development

While each component addresses the goals, objectives and needs related to a specific facet of installation development, all component plans should satisfy general planning goals for the installation. In addition, all component plans must be closely coordinated to ensure consistency and compatibility. Figure 2-7 illustrates the relationships of the component plans.

2-17. The Natural Environment. Component plans that specifically address the natural environment are shown in the following table. Elements of the natural environment are addressed in other component plans, including AICUZ/ICUZ, Energy, Landscape Development/Installation Design Guide, and Quality of Life component plans.

<i>Natural Resources</i>	covers land management, grazing and cropland management, forest management, fish and wildlife management, outdoor recreation, pest management, and historic preservation.
<i>Environmental Quality Protection</i>	addresses air quality, water quality, land and soils quality, toxic materials and hazardous waste management, recycling and solid waste management, the installation restoration program, fuel and hazardous substances spill preservation and mitigation, and radiation control.

2.18. The Built Environment. Component plans addressing elements of the built environment are:

<i>Land Use</i>	includes analysis of existing functional land use areas and land use relationships, future land use plans, and adjacent land uses.
<i>Airfield, Air and Range Operations</i>	addresses airspace systems, airfield systems, and ranges. This component is particularly important in view of the large proportion of land occupied by airfields at air installations.
<i>AICUZ / ICUZ</i>	addresses noise contours and off-installation current land use and zoning related to those contours.
<i>Utilities Systems</i>	includes sections on water, sanitary sewer, storm sewer, electricity, natural gas, and street lighting.
<i>Communications</i>	addresses telephone systems, computer networks, and cable television. This component is closely related to the Transportation Plan.
<i>Transportation</i>	addresses access to the installation for goods and people, including community mass transit, and vehicular and pedestrian circulation and parking within the installation.
<i>Energy</i>	covers aircraft operations, vehicle operations, installation operations, and land use/energy interactions, as well as guidance on energy efficiency in design.
<i>Installation Design Guide Architectural Compatibility Landscape Development</i>	includes a visual analysis of the installation and recommendations for architectural styles, colors and materials, as well as recommendations for landscape development, site planning and all related design elements that contribute to the installation's visual character.
<i>Long Range Facilities Development</i>	is the component that provides for the implementation of all other component plans. The Long Range Facilities Development Plan includes all proposed MILCON, Operations and Maintenance, Family Housing, and Non-appropriated Funds projects to implement the recommendations of the comprehensive plan. A Five-Year Capital Improvement Program is also included.
<i>Fire Protection</i>	addresses fire protection as an element of advance planning, fire protection-related design constraints, and agreements with civilian fire departments for emergency response.
<i>Contingency/Mobilization</i>	addresses the transition to combat and disaster preparedness.
<i>Physical Security</i>	addresses installation access/egress, siting considerations related to security, general threat information, and other physical security considerations related to comprehensive planning (Army only).

2-19. The Sociocultural Environment. Quality of life is an issue that is addressed in all component plans; the Quality of Life component plan summarizes recommendations and includes policies, programs and facility recommendations to enhance the quality of life for the installation community. This component should be viewed as the conscience of the other components; its goals and objectives, policies and programs should be integrated into all other component plans.

Quality of Life

includes recommendations affecting economic well-being, social well-being, educational opportunities, health care, housing and neighborhood environment, environmental quality, recreation opportunities, community support services, and aesthetics.

CHAPTER 3. THE PLANNING PROCESS

Chapter 3

The Planning Process

A. IDENTIFICATION

3-1. Setting the Foundation for Planning. The first phase of planning is to identify the goals for the comprehensive plan, the existing conditions upon which the plan will build, and the problems and opportunities perceived by installation personnel. (See Figures 3-1 and 3-2.)

3-2. Mission. The installation mission (or missions) is the most important element affecting the future direction of installation development. The mission dictates the functional requirements, sociocultural character, and physical appearance of the installation. Planners must become familiar with the mission and its effect on land use and the way of life of the installation community. If, for example, the installation is on 24-hour alert, there is a profound effect on everyday activities. If one of the missions at the installation is to provide basic training for recruits, the unique social needs of those recruits must be addressed. In addition, the future needs of the installation are determined to a large degree by future mission requirements - expansion or contraction of a certain activity could greatly affect physical development needs.

3-3. Identification of Planning Elements and Study Areas to be Considered. The comprehensive plans of the civilian communities traditionally have been made up of a number of major subjects, commonly referred to as "plan elements." Major elements include land use, transportation, housing, open space, recreation, public facilities such as schools and libraries. In more recent plans, the community's concern for environmental and energy constraints along with

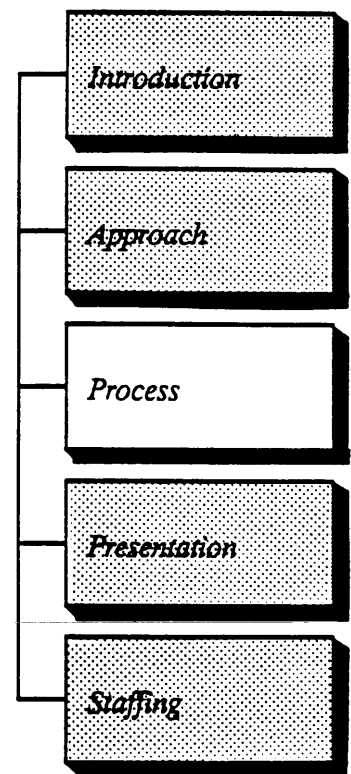


Figure 3-1

Contents of Bulletin: Process

the need for continued economic development have become more and more dominant. Also, more recent planning has included a policies approach rather than a strictly physical land use plan; plans cover virtually all activities for which the governmental unit has responsibilities. Planning for the military installation can and should be keyed to similar concerns. The elements, or "components" in military comprehensive planning terms, are discussed in Sections 2-17 through 2-19. Depending on the scope of the activities to be studied, one or more of the components will be involved and need to be identified at the outset.

3-4. Goals and Objectives.

a. One important goal of the comprehensive planning effort is to provide a plan that constitutes the framework for programming, design, and construction of planned facilities, structures and spaces. Goals and objectives for comprehensive planning should be developed at the outset of every planning process. These goals and objectives should be developed according to the following guidelines (see Figure 3-3):

- A **goal** is a desired end state; it is not necessarily quantifiable, and perhaps not totally attainable.
- An **objective** is a component of and something that leads toward the goal; objectives are usually quantifiable.
- A **policy** gives direction and guides routine actions toward accomplishment of objectives.

b. An example of a goal, objective, and policy is:

- Goal:** Provide for the highest possible quality of life for the installation community.
- Objective:** Provide for after-hours entertainment for installation residents.
- Policy:** Allow MWR and other groups to use installation facilities for after-hours activities.

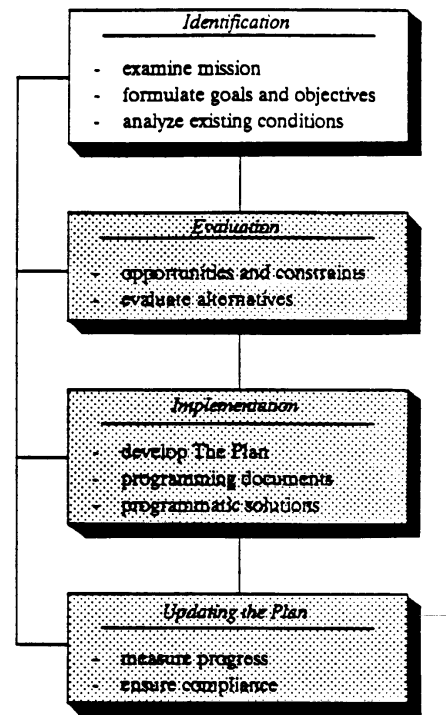


Figure 3-2
Planning Process: Identification

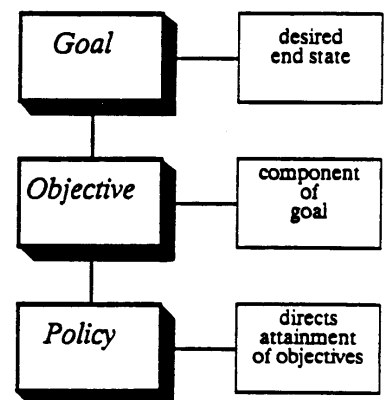


Figure 3-3
Goals, objectives and policies

c. The goals and objectives should reflect the specific requirements and characteristics of the installation. All goals and objectives for comprehensive planning should be adapted from and incorporate the following:

GOAL I: Provide effective and efficient use of installation resources to support the military mission.

OBJECTIVE: Provide information necessary for commanders to make valid operational programming decisions.

OBJECTIVE: Provide planning for maximum utility, efficiency, and flexibility of installation resources.

GOAL II: Make optimal use of the latest developments in energy-efficient concepts/systems/technologies.

OBJECTIVE: Minimize energy expenditures. Determine energy usages before the requirements are built into the comprehensive plan.

OBJECTIVE: Make optimal use of renewable energy resources.

OBJECTIVE: Plan for future flexibility to change fuel types based on future supplies/costs, to use new or improved energy systems as technology progresses, and to efficiently increase/decrease capacity as requirements change.

OBJECTIVE: Evaluate/incorporate conservation systems. Apply centralized energy monitoring/control systems, centralized or decentralized energy generation technologies, and energy-efficient transportation modes/systems. Emphasize use of the physical environment, seasonal climate, and microclimate (orientation and spacing).

OBJECTIVE: Use energy-efficient construction concepts/systems/technologies. At a minimum, investigate underground, multilevel, and/or composite or clustered facilities, active/passive solar systems, color surfacing concepts, and insulation systems.

GOAL III: Protect the natural and human environment.

OBJECTIVE: Minimize air pollution. Recommend systems/concepts (environmental/ emissions control devices, landscaping, etc.) that may be used to reduce air pollution impact.

OBJECTIVE: Minimize water pollution by:

- Conserving water through efficient equipment and processes such as multiple reuse, recycling, and recharge. Consider the use of innovative/alternative technology in the design and operation of wastewater treatment/management systems.
- Avoiding upsetting the natural water balance.
- Keeping undesirable/unnatural chemicals/elements from entering water courses through run-off or discharge.
- Retaining storm water run-off or water discharges until they can safely and properly enter waterways.

**MINIMIZE
POLLUTION**

OBJECTIVE: Minimize waste generation; maximize recycling. Minimize unnecessary waste generation in all areas of base operations. Maximize applications of recycling technologies.

**MAXIMIZE
RECYCLING**

OBJECTIVE: Minimize noise pollution. Consider noise sources from airfield operations and industrial areas, and impacts off as well as on the installation.

OBJECTIVE: Minimize adverse impacts on the natural environment by:

- Demonstrating an understanding of and planning an appropriate treatment of austere but sensitive habitats if such are found in and around the installation.
- Minimizing reliance on the use of toxic substances and materials, such as pesticides and herbicides.
- Using plant materials which are compatible with the natural ecosystem of the area.

OBJECTIVE: Properly/efficiently store and dispose of wastes. Include hazardous wastes and solid/liquid wastes which cannot be reasonably recycled.

**DISPOSE WASTES
PROPERLY**

GOAL IV: Provide the highest possible quality of life for the military community.

OBJECTIVE: Plan for convenient, dependable, and comfortable transportation. The transportation system should integrate the installation transportation system for people and goods into all modes of the local, regional, and national systems. Transit on the installation should be based on and encourage pedestrian travel, incorporating design elements to increase interest/aesthetics/comfort while diminishing adverse climatic factors.

**CONVENIENT
TRANSPORTATION**

OBJECTIVE: Plan communications linkages with other population centers. Include the potential implications of cable television and regional radio reception as means to retain currency in national affairs/trends, to promote education, and to facilitate the objectives of installation and local planning.

OBJECTIVE: Provide for maximum recreation and leisure time opportunities. Plan for a variety of outdoor and indoor activities. Minimize adverse impacts of environmental conditions upon the leisure requirements of the installation and local community.

OBJECTIVE: Plan facilities that are compatible with the environment. Dominant development trends in the United States frequently disregard the contrasting climate and natural beauty of the environment. Sound, environmentally sensitive planning should guide the development of the installation.

**MAKE FACILITIES
COMPATIBLE WITH
NATURAL ENVIRONMENT**

OBJECTIVE: Plan/design an efficient and aesthetically pleasing living and working environment through the use of sound planning and design principles and by:

- Giving careful attention to massing and spatial relationships in order to develop an efficient, interesting and aesthetically pleasing overall form for the installation.
- Developing an installation-wide aesthetic identity which emphasizes military tradition and esprit de corps and is at the same time compatible with the character and culture of the surrounding region.
- Clearly distinguishing the various major functional areas of the installation (housing, recreation, operations, etc.) through the use of sensitive design.
- Planning an installation sign program.
- Designing community details (street furniture, lighting, etc.) to be compatible with architectural forms.

SIGN PROGRAM

OBJECTIVE: Consider the social/psychological needs of installation inhabitants by:

- Designing for people's response to their environment.
- Addressing the ever-present human need for privacy, security, freedom, variety, and order.
- Planning/grouping facilities to create/ reinforce a sense of community, belonging, and pride.

GOAL V: Achieve optimum land use planning

OBJECTIVE: Establish the most efficient and functional layout by:

- Integrating the optimum technologies, historical data, and systems (circulation, landscape, utilities) into a cohesive and practical comprehensive plan.
- Making optimal use of desirable natural features (terrain, climate); "design with nature."
- Planning for adaptability in land uses, linkages, and other infrastructures to allow a rapid and economical response to mission or organizational changes.

***DESIGN WITH
NATURE***

OBJECTIVE: Plan for future growth and/or change by:

- Providing for future expansion or realignment without adversely affecting functional relationships.
- Planning for adaptability in land uses, linkages, and other infrastructures to allow a rapid and economical response to mission or organizational changes.
- Locating facilities within applicable regulatory safety criteria so that criteria distances can be increased without adversely affecting other facilities.
- Using AICUZ/ICUZ guidance in installation planning and surrounding area recommendations.

OBJECTIVE: Develop recommendations for land uses in adjacent areas. Recommend compatible and complementary land uses that would preclude often typical, undesirable "strip" development. Design on- installation development to reflect off-installation character.

OBJECTIVE: Enhance the installation image. Ensure the visual image of the installation is compatible with the surrounding environment through such planning considerations as architectural theme and compatible plant and building materials.

GOAL VI: Plan for maximum maintainability.

OBJECTIVE: Plan to use low-maintenance or maintenance-free architectural design materials by:

- Using materials/finishes which require minimal or no recurring maintenance.
- Planning for adequate space for maintenance materials and equipment as well as access to systems and equipment for easier maintenance.
- Emphasizing standardization of parts and modular components.
- Avoiding the tendency of planning for each activity or office on the installation with separate structures or equipment. Design to minimize maintenance requirements, such as excessive grass mowing, sign replacement/painting, and manual watering or trimming of landscape plantings.
- Planning for uniform mechanical/electrical utility plants and systems, and developing efficient utility distribution systems free of duplication or excess capacity beyond that needed for possible expansion.

**LOW-MAINTENANCE
MATERIALS**

OBJECTIVE: Use the existing environment to minimize maintenance by utilizing locally available, nearly maintenance-free material, working with the local climate/environment, and using the natural topography to reduce maintenance requirements.

d. The following goal and related objectives provide an example of a planning goal adapted for a specific installation.

GOAL: Develop a Community Center comprised of community commercial and community service uses to serve as the marketplace for the Hometown AFB community.

OBJECTIVE: Provide for safe and inviting vehicular and pedestrian access at all community facilities.

OBJECTIVE: Maintain the "Main Street U.S.A." character of the existing community node at the intersection of Avenue D and 2nd Street.

OBJECTIVE: Provide for convenient shopping and errands for both on-base and off-base military residents.

3-5. Existing Conditions.

a. The first phase of the comprehensive planning process includes collection of data pertinent to the natural, built and sociocultural environments. Collection of these data enables the planners to understand the workings and environment of the installation, as well as opportunities for and constraints to development. Examples of data to be collected for the comprehensive planning effort include existing land use, location of natural constraints such as steep slopes or wetlands, traffic counts, and space requirements of installation organizations. The kinds of data that should be collected and collection methods and sources are described in the Comprehensive Planning Data Sources and Applications Bulletin/Manual. Required data specific to component plans are discussed in the corresponding bulletin/manuals. An example of a data sources matrix is shown in Figure 3-4. Data should be collected for each component plan to address the following questions:

**COLLECT
PERTINENT
DATA**

- Issues and problems:
 - What are the current problems that require solutions in the Plan?
 - What are the controversial issues requiring resolution before the Plan can address the problems?
- Resources:
 - What resources does the installation now have -- natural, built, or programmatic/sociocultural?
 - What opportunities can be taken advantage of?
- Needs:
 - What are the requirements or needs as perceived by command, staff, and users?

In a similar way, an inventory of the "community planning framework" off-installation, as it affects installation actions, is necessary.

- What is available in the outside communities? How do their sets of planning policies interact with the base? What are their resources, their needs and requirements?

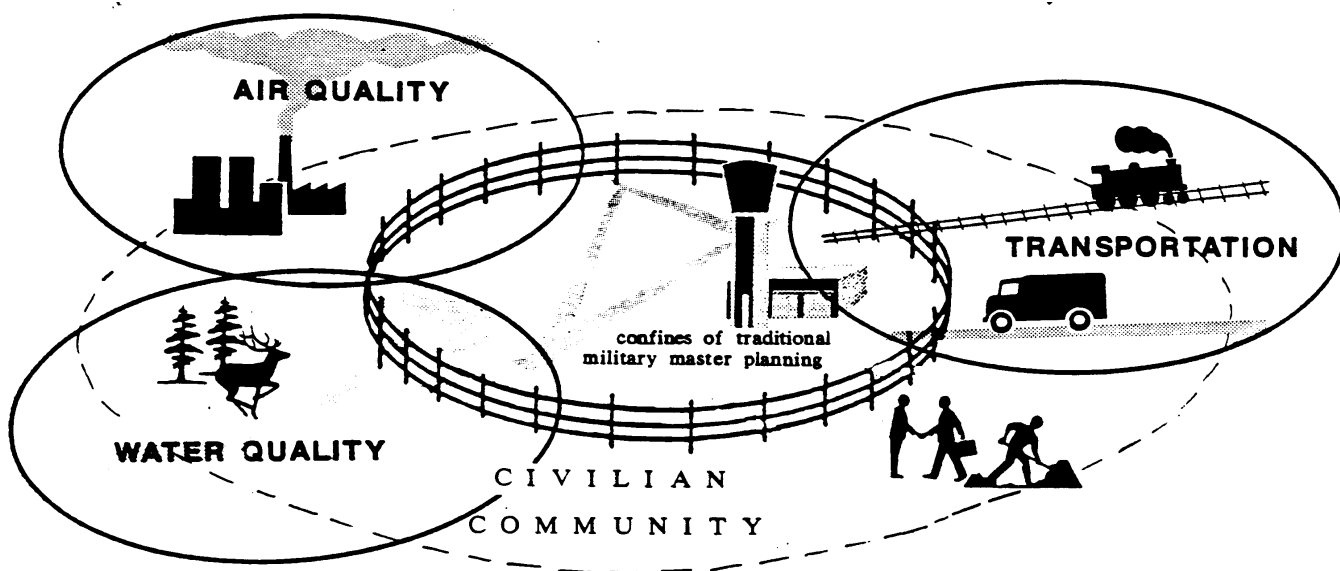


Figure 3-4

Different components may require study areas with different boundaries

b. Depending on the components to be included in the comprehensive plan for an installation, different study areas will need to be identified. It is unlikely that many will fall entirely within the installation boundaries. For example, there will be several large areas for environmental concerns such as air quality or water supply, and somewhat smaller areas for topics related to transportation planning, particularly access to the installation. There is no single area that is applicable to all topics; watersheds may encompass several counties, for example, while traffic generation zones may be only a part of one township. The selected areas should be as coterminous as possible so that data can be properly and easily compared. Very close coordination with the adjacent community's planning staff is essential in determining the appropriate study areas outside the installation so that maximum use can be made of data already collected by the community.

B. EVALUATION

3-6. Opportunities and Constraints.

a. The information collected in the previous phase should be synthesized into a collection of opportunities for and constraints to future development at the installation. An understanding of these factors will enable the planner to formulate and evaluate workable alternative concepts for development. (See Figure 3-6.)

b. Opportunities can suggest new development patterns or focal points. For example, if one aspect of the installation's mission is expected to be scaled down significantly, resulting in reduced space requirements, an opportunity for development may exist in the area previously occupied by the personnel and equipment performing that mission.

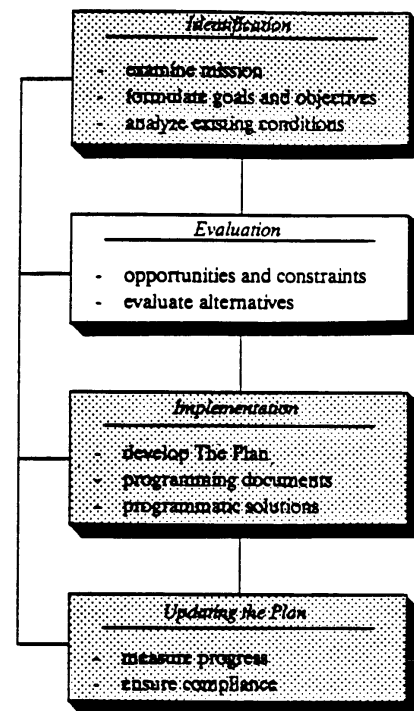
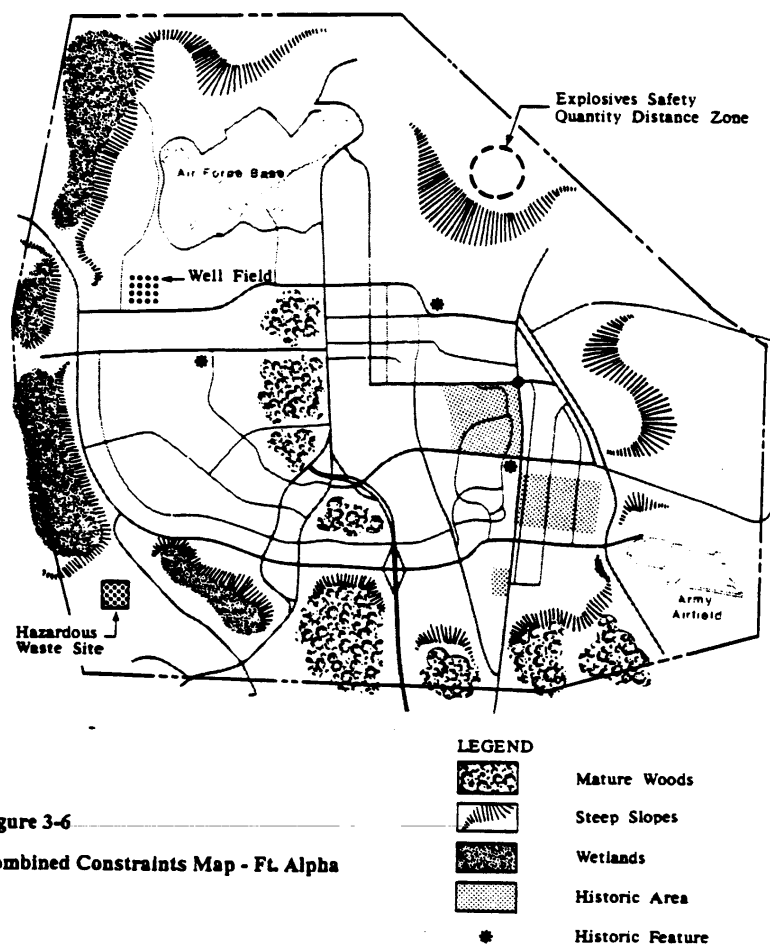


Figure 3-5
Planning Process: Evaluations

c. Similarly, if a large new industrial complex is scheduled for construction, there may be an opportunity for adaptive reuse of the old industrial buildings, or the buildings can be demolished, leaving a new development site. Planners should also look for all positive characteristics of the installation that can be enhanced or built upon. For example, if there is an especially attractive complex on the base, land use, transportation, and landscape measures all can be used to make the complex a visual focal point of the installation. Opportunities for coordination with the surrounding community should also be identified and explored, particularly in the areas of transportation and land use.

d. **Constraints** are usually more quantifiable than opportunities and fall into the areas of:

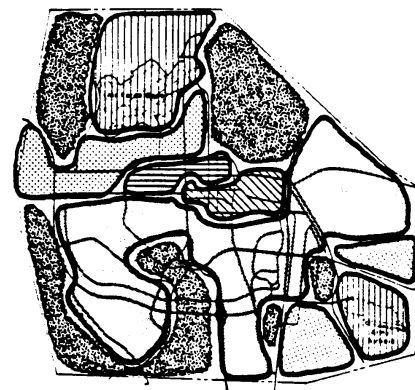
- Sociopolitical - What is the realistic level of support to be expected? This can apply to the base command structure or to civilian community political leadership.
- Technical - What are the regulations and other technical criteria that govern development at the installation? Examples include explosive quantity- distances and programmatic requirements.
- Environmental - What are the natural environmental constraints to development? Examples include flood plains and endangered species habitats.
- Economic - What are the most economic -- in terms of long-term capital cost - development solutions?
- Physical - Is the installation too large, too small, or otherwise inadequate?

e. Opportunities and constraints can be displayed in the standard overlay composite technique to illustrate areas that are suitable and unsuitable for development. This is a useful tool for developing and evaluating alternative concept plans.

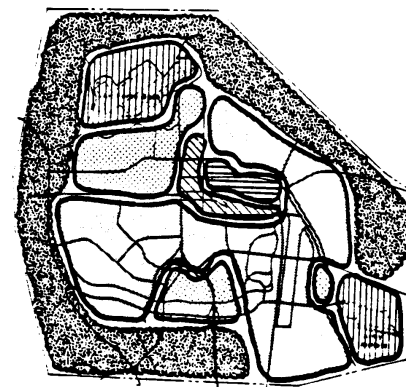
3-7. Alternative Plans.

a. To make the best possible informed decision about the future development of the installation, commanders and other decision makers need to have alternatives or options from which to choose (see Figure 3-7). In developing alternatives, planners should be as creative and innovative as possible: in the early stages of discussion, no idea should be dismissed as too wild or unrealistic. Once all possibilities have been presented and discussed, they can be winnowed, with the truly impractical ones discarded and others logically combined into alternative concepts that suggest different directions for future development of the installation. The optimum number of distinct alternative concepts is three.

b. Citizen participation is essential to the checks and balances built into our form of government. For many years, the federal government has mandated citizen participation in federal plans and programs. Citizens can be equated with "users" in the context of military community. Whenever possible, the users who will be affected by the planning decisions involved should participate in the development of alternatives. For this purpose, on-installation personnel and their dependents and (where appropriate to the specific planning activity) representatives of the off-installation community should be provided with an opportunity to offer their ideas, suggestions, and concerns related to the specific planning activity involved. **In this way, planning alternatives are developed with the users, rather than for them.** Wherever feasible, suggestions and comments obtained from the users should be incorporated into the planning alternatives. User groups should have opportunities to discuss the planning alternatives as they are being developed. With the approval of command personnel, participants should be notified of the planning process and schedule. This notification must include a description of the



Land Use Alternative A



Land Use Alternative B

LEGEND






	Administration		Industrial
	Community		Recreation
	Housing		Airfield

Figure 3-7

Alternative plans

roles that participants are expected to play in the process, and of the regulations that will govern the type and timing of their inputs. For example, all participants should be kept informed about the decision-making process and schedule and should be strongly encouraged to take part in the process.

c. Particularly for those issues which require military-community interaction, close working relationships need to be forged between the installation personnel and community representatives. A similar planning process of identifying community issues, developing alternative means of resolving them, and devising plans, programs and policies to meet predetermined objectives will have occurred in the outside community. The involvement of off-base participants is:

- a requirement of Army and Air Force policy;
- essential to the understanding by these groups of installation needs and programs to meet them; and
- important for military understanding and coordination of plans and programs with local, regional, state and federal agencies.

A multi-layered system of contact normally will be established, including: attendance at formal meetings and hearings before planning commissions; participation, probably as a non-voting member of various technical committees in the region; and one-on-one informal contacts between base planners and their counterparts in local and regional governmental agencies. Such contact must be on a continuing and mutually respectful basis.

d. Once the planning team has decided on alternative concepts for consideration, they should evaluate them according to the opportunities and constraints developed in the previous step. This might be considered the center point of the total process; everything preceding is preparatory in

**FORGE
RELATIONSHIPS
WITH THE
COMMUNITY**

**EVALUATE
ALTERNATIVES**

terms of identifying and surveying what the installation now has, and what it needs, against the constraints and opportunities acting upon those requirements; and everything following is refinement and interpretation, and implementing of chosen alternatives. Therefore, as much attention as possible should be given to this part of the evaluation process. In addition to clearly presenting the alternatives and the preliminary evaluation based on constraints and opportunities, additional factors must be introduced at this time. The actions at this step are:

- To select alternatives that should be studied in detail;
- To delete alternatives that may prove to be unresponsive to plan objectives, or to have unacceptable social, economic, ecological, or institutional implications; and possibly
- To restructure planning objectives and alternatives in the event that the short-cut analysis results in new understanding regarding objectives or the best ways to achieve them.

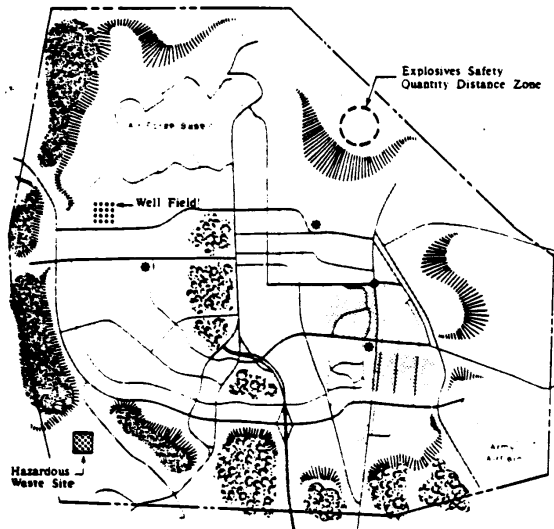
e. The alternatives should be presented to the decision-makers for discussion and evaluation. The ideal group for this presentation is the working group of the Planning Board/Facilities Board, discussed in Section 1-9, plus any commanders or other individuals who are responsible for the final decision. It is only through this continuing involvement that the values, desires, and priorities of those for whom the plan is prepared can be realistically included in the Plan. **The discussion should be billed as a working session or meeting rather than a briefing;** the atmosphere must be conducive to a real discussion of the merits of the alternatives. No final choices should be expressed at this session, and second-guessing of command preferences should be prohibited. If the planning team has a strong preference toward one of the alternatives, they may label it as the preferred alternative for presentation to the decision-making group.

f. The risks and uncertainties associated with each alternative should be made clear to all participants. Risk and uncertainties can arise from any number of sources, including:

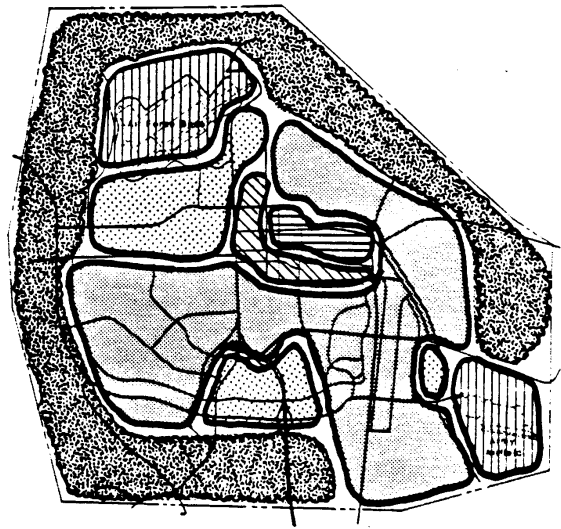
- The difficulty of accomplishing institutional changes for implementing a given plan.
- The uncertainty of funding for the various alternatives.
- The risk that major objectives will change over time.
- The uncertainties associated with long-term predictions.
- The likelihood of major new policies being adopted by federal, state, or local agencies.

***IDENTIFY
RISKS AND
UNCERTAINTIES***

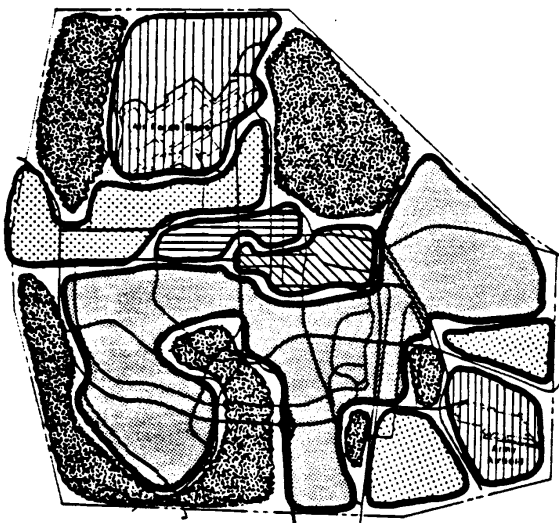
g. Ideally, a consensus will emerge from the meeting on a preferred concept for further development. The group may not be willing to make a decision at the first meeting, however, and the planning team may need to modify or refine one or more of the alternatives for further discussion. Eventually, an alternative concept should be selected that most closely meets mission requirements, fulfills all planning goals and objectives, and responds to the opportunities and constraints. Figure 3-8 is an example of land use alternatives evaluated with the Opportunities/Constraints Map, which results in the Preferred Land Use Plan.



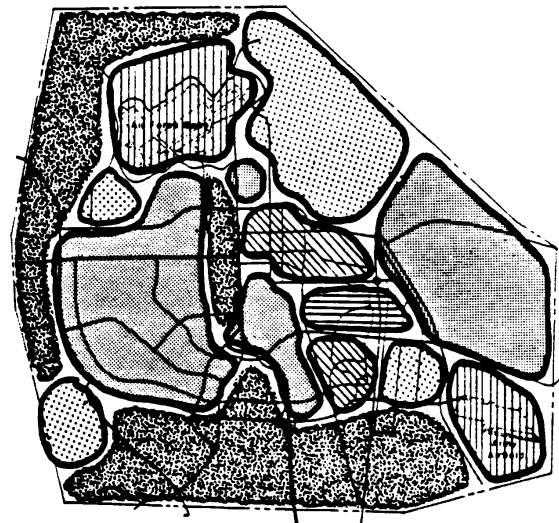
Opportunities & Constraints



Land Use Alternative A



Land Use Alternative B



Preferred Alternative

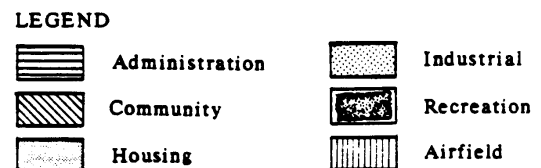


Figure 3-8

Land use alternatives evaluated with the Opportunities/Constraints Map

C. IMPLEMENTATION

3-8. Choosing and Developing the Plan.

a. Once an alternative development concept has been selected, it is further developed and refined into a comprehensive plan for the installation (see Figure 3-9). Each component plan is fully developed with goals and objectives, discussion of existing conditions, constraints and opportunities, and future development plan. The text is illustrated with maps that provide a spatial representation of the plan elements. Details of plan presentation are described in Chapter 4.

b. Not every need or problem can or should be remedied with a new facility. For example, congestion at gates at certain hours may be more easily and appropriately alleviated through staggered work hours than through a new gate design. Programmatic solutions (i.e., those not requiring facility requirements) to problems are usually less costly and can be implemented more quickly than construction projects. Planners should look wherever possible for programmatic solutions to needs and problems identified in the planning process.

c. One of the most important aspects of final plan development is the Long Range Facilities Development Plan, which includes all projects needed to implement the recommendations contained in all other component plans. Each component plan should be carefully reviewed to identify what projects are necessary for implementation. A sample Long Range Facilities Development Plan is shown at right, Figure 3-10.

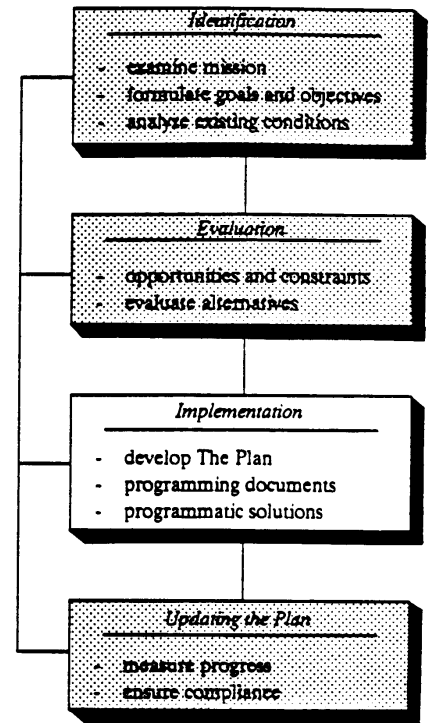


Figure 3-9

Planning Process: Implementation

SAMPLE LONG RANGE FACILITIES DEVELOPMENT PLAN

<u>FY</u>	<u>PROJ#</u>	<u>DESCRIPTION</u>	<u>SCOPE (S.F.)</u>	<u>GRID LOCATION</u>	<u>FUNDING SOURCE</u>
92	F-148	Reconstruct South Dr./3rd St.		I-8	MCP
93	F-136	Dining Hall	24,000	J-7	MCP
94	F-119	Physical Fitness Center	28,200	J-7	MCP
95	F-137	NCO Display Building	10,000	J-8	MCP (Private)
95	F-142	Classroom Facility	20,722	J-7	MCP

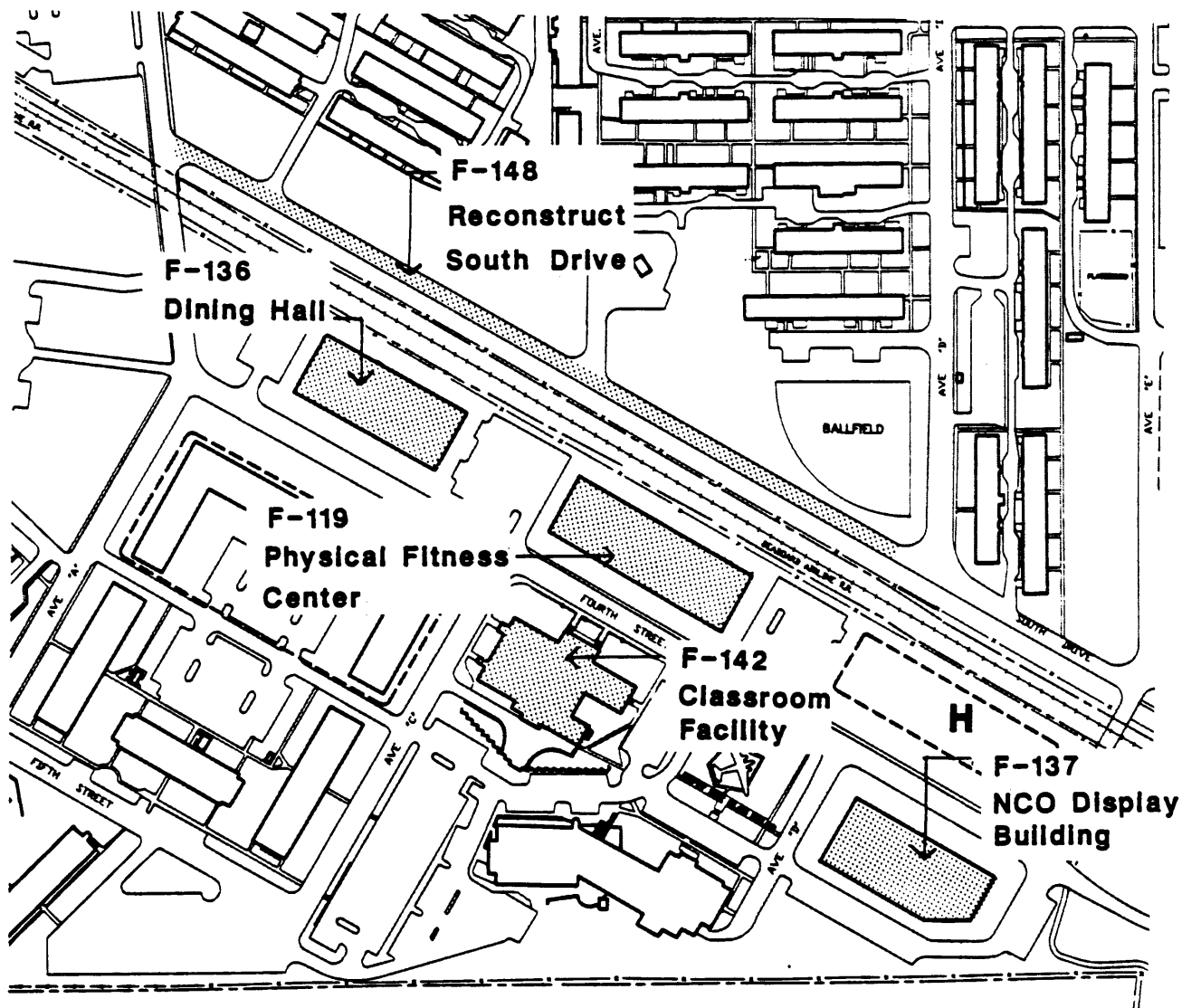
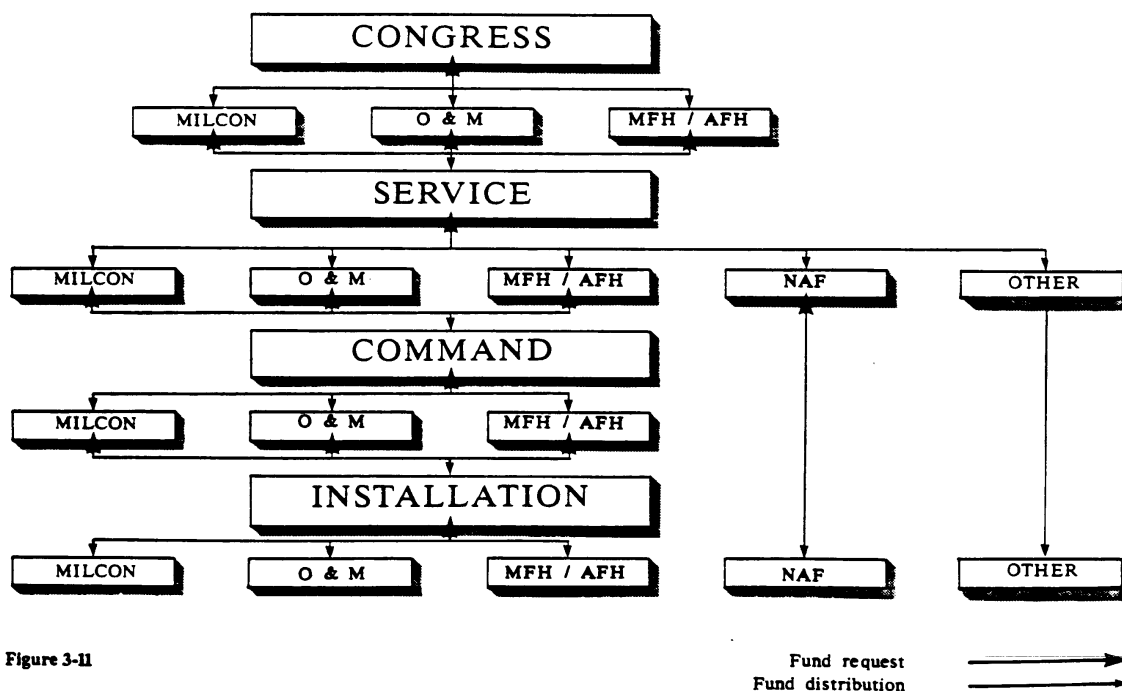


Figure 3-10

Long Range Facilities Development Plan sample

3-9. Programming Documents. The facilities portions of the comprehensive plan are implemented through programming documents. Recommendations of the Plan not related to facilities are implemented through policies and programs of the installation commander. The major tool for facility plan implementation is the MILCON program, illustrated in Figure 3-11, which covers all major construction projects. Requests for funding for these projects are generated with DoD Form 1391, Military Construction Project Data. Other funding sources for projects are Operations and Maintenance, Military Family Housing/Army Family Housing, Non-Appropriated Funds, and tenant funds. The military's initiative toward privatization of certain functions or services provides opportunities for seeking private funding for some

facilities. The programming process and its links to the planning process are described generally in the Long Range Facilities Development Planning Bulletin/Manual. The Planning Board/Facilities Board approves all funding requests and should ensure that all requests are in compliance with the Plan.



CHAPTER 4. PLAN PRESENTATION

Chapter 4

Plan Presentation

A. IMPORTANCE OF HIGH QUALITY PRESENTATION

4-1. "Selling" the Plan. The value of the comprehensive plan and the importance of adhering to it will not automatically be apparent to all. High quality, meaningful graphics; brief, succinct text; and an attractive overall package will make the plan more "user-friendly;" people are much more likely to read an attractive document that is not overwhelmingly bulky. (See Figure 4-1.) The content of a comprehensive plan may be excellent, but few people are likely to find out if the document itself is unattractive and uninviting. This plan must be "sold" to local commanders and community leaders, as well as to major command, service, and congressional leaders.

4-2. Narrative.

a. While the narrative plan should contain all information necessary to give the reader a full understanding of existing conditions, opportunities, constraints, and details of the plan itself, excessive wordiness should be avoided. Detailed descriptions of the planning process are generally not necessary; the focus of the plan document should be on the recommendations of the plan. Similarly, detailed descriptions of existing conditions are often better omitted from the main document; they may be placed in an appendix if they will be of interest to some readers.

b. A succinct, clear writing style is mandatory for all plan documents. Use the active voice whenever possible and avoid jargon. If different authors write different parts of the text, careful editing should ensure consistency in style and

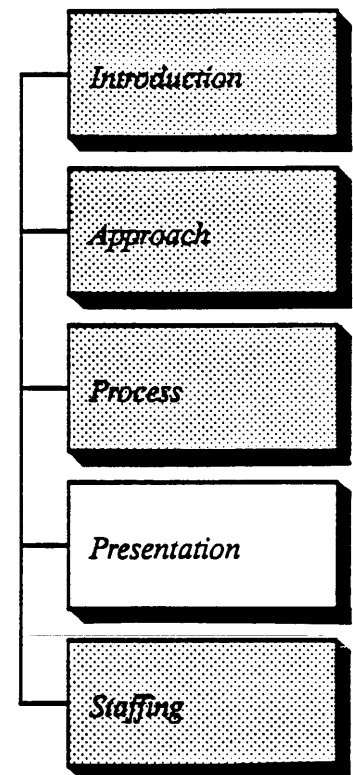


Figure 4-1
Contents of Bulletin: Presentation

terminology. The Elements of Style, by William Strunk, Jr. and Edward Terrey, is an excellent, concise primer on good writing style.

c. An executive summary or plan overview should be prepared as part of the comprehensive plan. (See Figure 4-2.) A summary of the plan's highlights and major recommendations should always be included at the beginning of the main plan document. A separate executive summary or plan overview document can contain that summary, an overview of existing conditions, and a summary of each component plan. Attractive poster-style summary documents have been used successfully in many civilian communities. These posters usually emphasize graphics more than text; they can be posted throughout the installation to educate the community about the Plan.

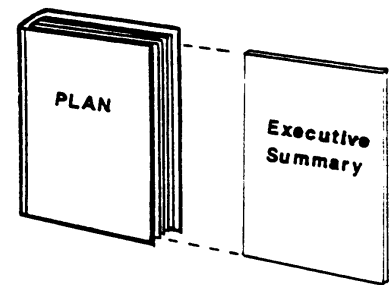


Figure 4-2
Plan overview

d. The narrative should be prefaced with a letter signed by the installation commander endorsing the plan and directing all installation personnel to adhere to it. This letter will lend additional weight to the plan in the minds of current decision makers as well as subsequent commanders.

4-3. Graphics.

a. High quality graphics are probably the most effective method of explaining and selling the plan to the military and civilian communities. Graphics should be simple and consistent throughout the document. Photographs can be used to break up long stretches of text; color graphics are very effective (if the budget allows). The design of the document cover is very important: it is the first impression of the plan for most people, and it should be a professional representation of the installation and the men and women who live and work there. (See Figure 4-3.)

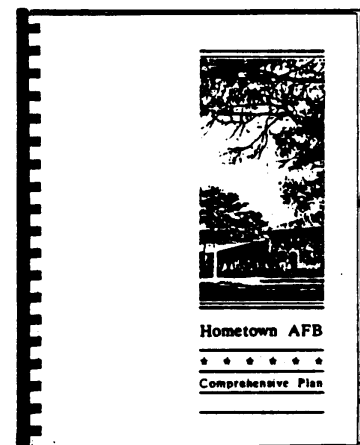


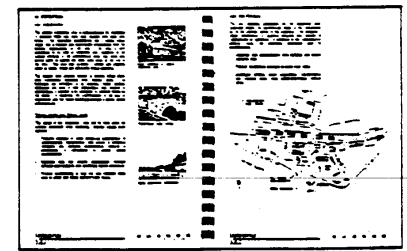
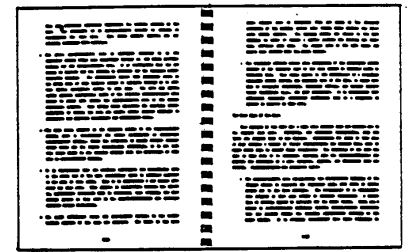
Figure 4-3
Cover provides first impression

b. A consistent graphic appearance is achieved through consistent styles of lettering and drawing, consistently sized graphics (two or three sizes per document is optimal), and use of a uniform page layout throughout the document for both text and graphics. Margins, title blocks, heading style and sizes, and terminology should all be uniform. (See Figure 4-4.)

4-4. Briefing.

a. A slide or video briefing on the comprehensive plan is a useful tool for installation planners throughout the life of the plan in presenting its highlights to commanders, community leaders, and other interested parties. The briefing should last approximately 15 minutes and contain good aerial photographs, photos of on-site conditions, plan graphics, and title slides to emphasize important points. At a minimum, the briefing should cover a brief summary of opportunities and constraints and detailed coverage of the Long Range Facilities Development Plan and other implementation elements. Slides are effective for this purpose because they can be changed as conditions or projects change. Video briefings are also very effective, but they are more expensive and less flexible. The advantage of a video presentation is that it can be used easily as part of the briefing for all incoming personnel.

b. Good presentation techniques are essential to an effective briefing. Practice the briefing ahead of time to measure the timing and effectiveness of remarks. Avoid discussing in depth the details of the planning process; the audience is most interested in the recommendations of the Plan. Do not read the text of the presentation; reading to an audience is boring and lifeless. If notes are necessary, prepare them in outline form and refer to them sparingly. Eye contact is important in establishing rapport and confidence with the audience.



Preferable

Figure 4-4

Graphics help break up text

B. UPDATING THE PLAN

4-5. Keeping Up With Changes.

a. The comprehensive plan should be reviewed at least annually for currency and appropriateness. (See Figure 4-5.) Otherwise, the plan will become obsolete very quickly, resulting in a more frequent need for costly new plans. AR 210-20 and AFR 86-4 outline requirements for plan review and updates. Review Section 1-9, Organizing for Planning, for a discussion of procedures and personnel necessary for successful planning and implementation. Institutionalizing those procedures for monitoring construction, demolition, renovation, and maintenance will help keep the Plan current.

b. The comprehensive plan should contain a brief description of the procedures followed in the preparation of the plan, including data collection methods and word processing and graphics software (CADD) or graphics materials. (If word processing or CADD software is used in producing the plan, copies of the computer files in specific software or standard binary format should be provided to the installation as part of the deliverables package.) A brief discussion of procedures to be used in updating the plan may also be included in the original plan document or its appendixes.

c. Comprehensive plans can be permanently bound or presented in three-ring binders. The advantage of a permanent binding is that it lends the Plan a more substantial, permanent look. A document that is bound does not appear vulnerable to constant changes. On the other hand, all plans do need to be revised from time to time, and a permanent binding makes necessary small changes more difficult to make.

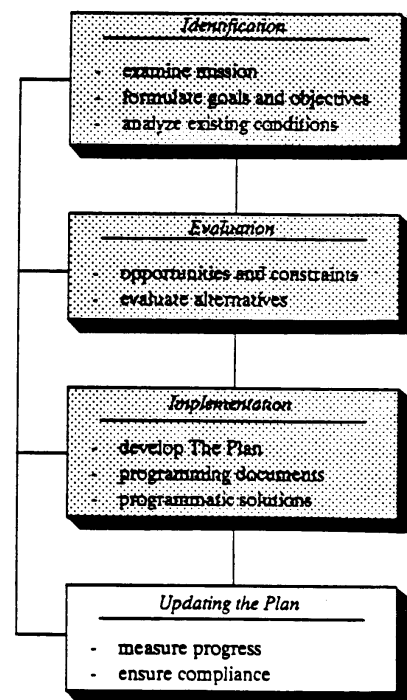


Figure 4-5

Planning Process: Updating the Plan

- d. If, in the annual review, planners determine that changing mission requirements, goals and objectives, or other conditions require an update, they should proceed with changing the appropriate part of the plan, following the original methodology as closely as possible. Appropriate pages in the plan text should be amended, deleted, or expanded to reflect the changes, and all graphic plans or Tabs should be revised appropriately. All affected parties, as well as the Planning Board/Facilities Board and installation commander, should participate as fully in the updating of the plan as they did in the original planning process. The plan document should include a page listing the dates and subjects of all amendments.

CHAPTER 5. STAFFING TO PREPARE AND
MAINTAIN COMPREHENSIVE PLANS

Chapter 5

Staffing to Prepare and Maintain Comprehensive Plans

A. IN-HOUSE PLANNERS AND SUPPORT PERSONNEL

5-1. Commitment of Installation Personnel.

a. The most important person in the comprehensive planning and implementation process is the installation commander. The Plan is the commander's plan; it must have the active participation and support of the commander for successful implementation.

b. The success of the comprehensive plan also depends in large part upon the presence of a knowledgeable staff that is qualified for and committed to the preparation of a workable plan (see Figure 5-1.) The project manager for the comprehensive planning process should be a professional planner; the community planner/installation master planner is the logical choice as the project manager. If that position is unfilled at the installation, the person who has the broadest knowledge of installation planning issues -- existing conditions, future needs, projects, and opportunities and constraints -- should be appointed project manager.

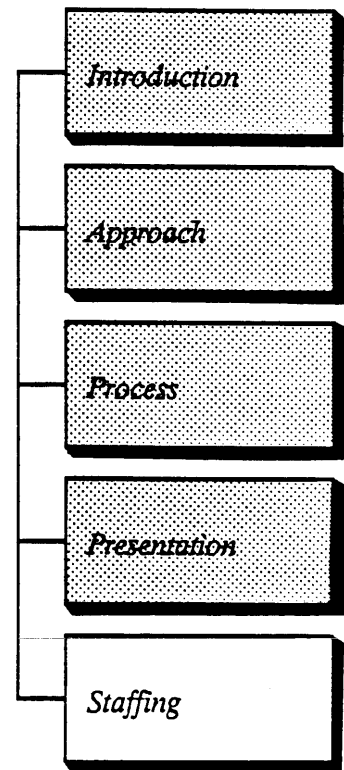


Figure 5-1

Contents of Bulletin: Staffing

c. The role of the project manager is to direct in-house personnel or consultants in the preparation of the comprehensive plan (see Figure 5-2). The project manager must make a substantial time commitment to the plan; the preparers of the plan, particularly if they are consultants, will need a great deal of assistance in tracking down information, learning about the particular culture of the organization, and coordination of interviews and other meetings.

d. Aside from the project manager, all engineering personnel who have knowledge of planning issues and projects should be encouraged to participate in the planning process. The comprehensive plan will be implemented largely by engineering personnel; the more they are involved in the planning process, the more likely they will be to support the comprehensive plan and willingly implement it.

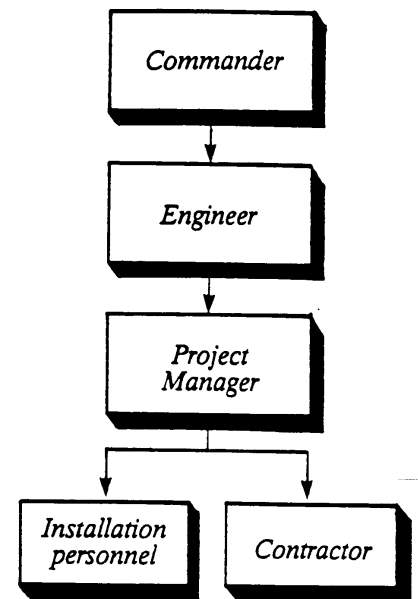


Figure 5-2
Participants in the planning process

B. CONTRACTOR ASSISTANCE

5-2. Contractor Selection and Qualifications.

a. Regulations give guidance for the selection of contractor firms for professional service contracts (AFR 88-31, Selecting A-E Firms for Professional Services by Negotiated Contracts, and USACE Engineer Federal Acquisition Regulation Supplement, Part 36. The process for securing A-E services estimated to exceed \$10,000 is described in paragraph 5-2.b. below and illustrated in Figure 5-3.

b. The Engineer:

- Develops a Statement of Work
- Estimates the cost and/or A-E fees
- Assembles examples indicating the type and quality of work and service expected of the A-E
- Assembles material to be furnished to the contractor by the government
- Ensures that a synopsis of the requirements for A-E services is published in the Commerce Business Daily (CBD). The CBD advertisement will usually require firms to respond by submitting a Standard Form 255, "Architect-Engineer Related Services for a Specific Project," and Standard Form 254, "Architect and Engineer and Related Services Questionnaire."

The Preselection Board develops and adopts an evaluation procedure and conducts the evaluation. The board recommends a preselection list of three to six qualified firms.

The Selection Board makes a recommendation for final selection from the list provided by the preselection board. The Selection Board should interview all the firms on the

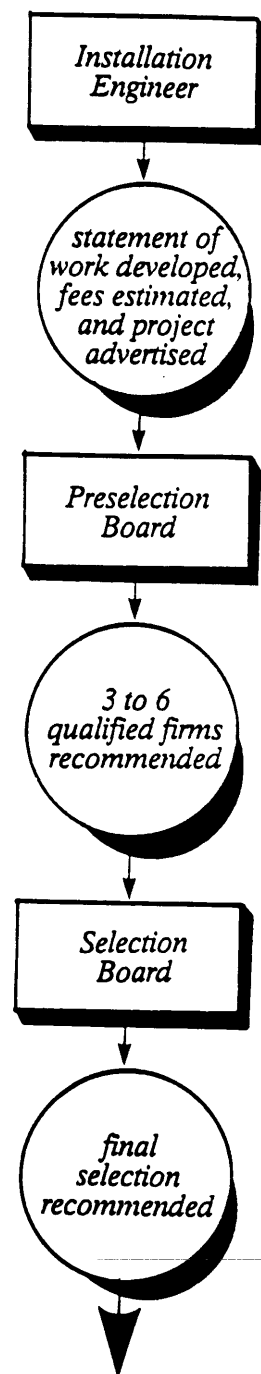


Figure 5-3
Planning process diagram

preselection list, preferably in person, before making its recommendation. The selection is approved by the Engineer and at the major command or service level, depending upon the amount of the proposal. Upon approval of the selection, the contracting officer and technical representative meet with the A-E of the highest priority and attempt to negotiate an equitable contract. If satisfactory negotiations cannot be concluded with the first firm, negotiations are officially terminated and initiated with the A-E of the second highest priority. This procedure is followed until satisfactory terms can be concluded with one of the selectees.

c. Ideally, contractors selected to provide comprehensive planning services should have military planning experience. Although this is desirable, firms that have relevant civilian experience should not be eliminated, as their other experience may bring valuable insight into military planning issues.

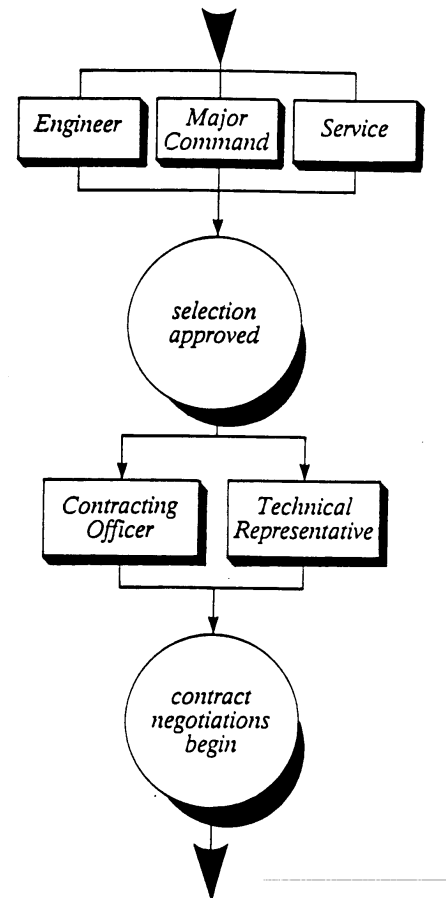


Figure 5-3
Planning process diagram

d. Comprehensive planning requires the talents of people from many disciplines. A comprehensive planning team should therefore be comprised of multi-disciplinary team members. Contractors who represent one firm may have all required disciplines in-house; however, in-depth experience in all disciplines is difficult to maintain or provide under one roof. The use of subcontractors, or a joint venture, therefore, may be an excellent response to the government's advertisement. The team approach requires the assembly of a group of specialists who can collectively channel their expertise to provide dynamic planning services. Disciplines desirable in a comprehensive planning team include the following:

***A MULTIDISCIPLINARY
TEAM IS NEEDED***

- City, Regional and Urban Planners
- Landscape Architects
- Mechanical Engineers
- Civil Engineers
- Structural Engineers
- Electrical Engineers
- Architects
- Environmental Planners
- Urban Designers
- Architectural Programmers
- Aerial Surveyors
- Photogrammetric Engineers
- CADD Operators

All or portions of these disciplines can be represented depending upon the scope of the planning effort.

5-3. Pre-Negotiation Conference. Once a contractor or contractor team is selected, it is important to establish a pre-negotiation conference at the installation. The goals of this meeting should be to familiarize the contractor with the Statement of Work and brief the contractor about any special conditions pertaining to the planning effort. In attendance should be the contractor's key representatives, the designated installation project manager, contracting and negotiating representatives, and other key installation personnel who will be major decision-makers during the planning process. All parties should leave this conference with a clear and common understanding of the work to be accomplished, an understanding of existing installation conditions and a feeling for availability and condition of data, which may affect the contractor's level of effort and fee proposal.

5-4. Fee Negotiation. The Contractor should prepare a fee proposal in a format that will allow an itemization of costs organized by component plan and maps or Tabs. This itemization should include level of effort (i.e., number of hours by each discipline) as well as other direct costs per component plan. Any special conditions or assumptions on which the contractor's fee is based should be listed in written form and submitted with the fee proposal. These assumptions should then become part of the contract for use in resolving potential future disagreements about scope interpretation during the planning process.

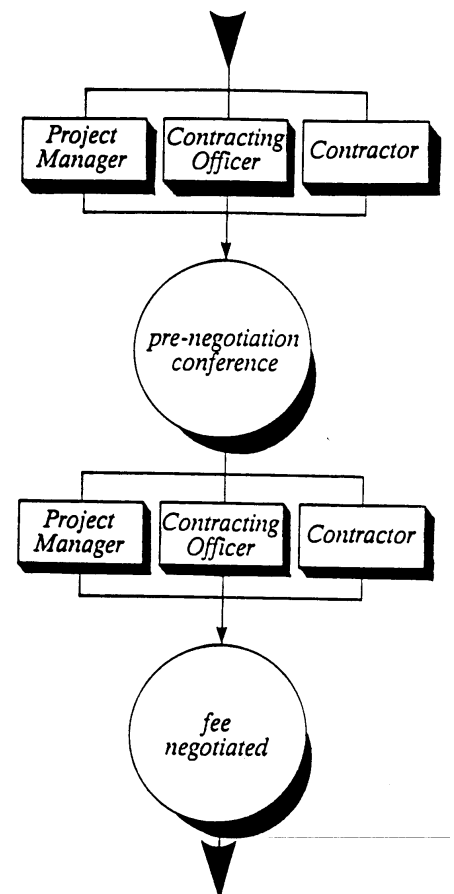


Figure 5-3
Planning process diagram

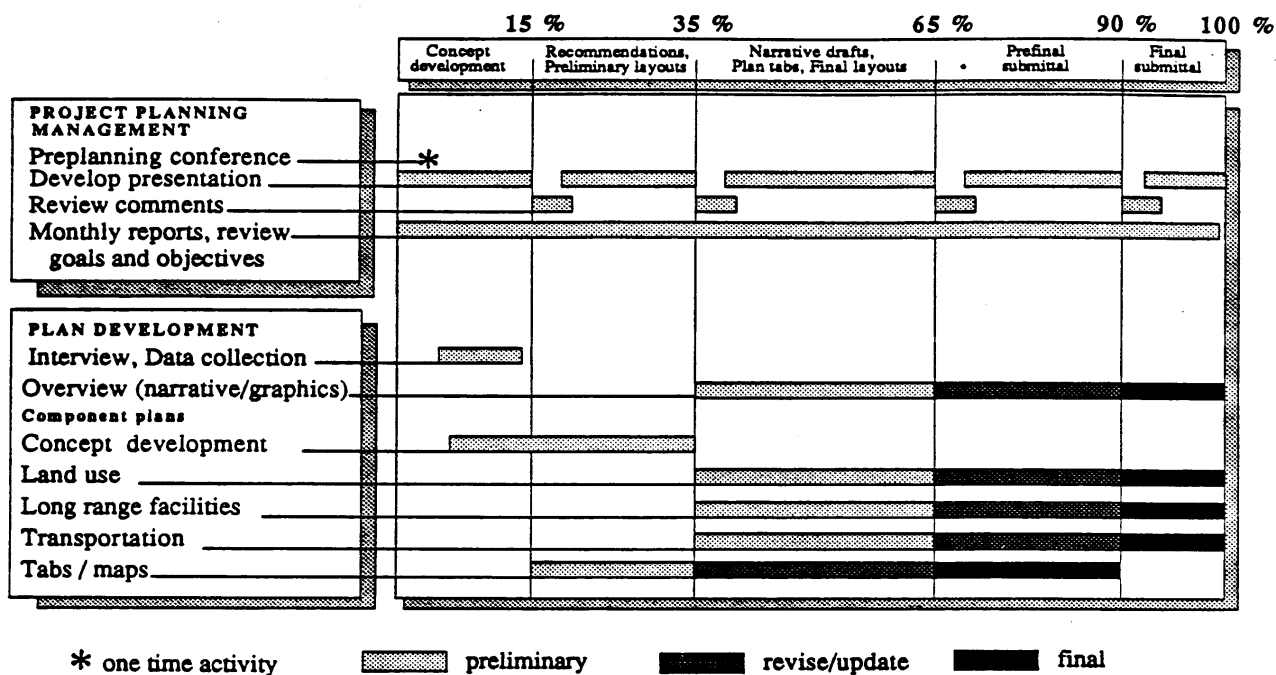


Figure 5-4

Submittal schedule sample

5-5. Project Schedule. After successful negotiations are concluded, the consultant should submit a schedule noting project milestones, review time frames and dates for submittals. In addition, identify contractor and client key personnel at this time. Structure the submittals as appropriate for the effort; it is important that the contractor and the project manager agree at the outset of the project on a submittal schedule and the contents of each submittal. A comprehensive planning process can range from 12 to 18 months, depending on the scope. For example, if mapping is part of the scope, the time frame may be longer. An example of a submittal sequence, developed for the Arnold Air Force Base Comprehensive Plan, is shown in Figure 5A. Numbers of copies of each submittal should be determined during the preparation of the Statement of Work and linked to the schedule. The schedule should then be distributed to all parties involved and used as a check point for the project progress. Any delays or other changes in schedule should be noted and a new schedule distributed.

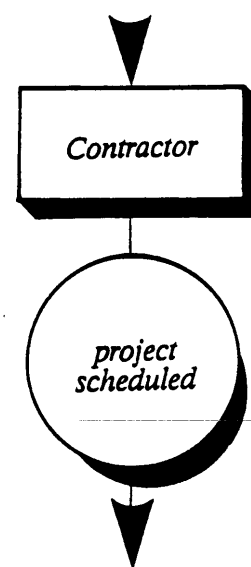


Figure 5-3

Planning process diagram

5-6. The Kickoff Meeting. The planning process should begin with a meeting attended by all planners and installation personnel who will be involved with plan preparation and implementation. The purpose of the kickoff meeting is to set preliminary goals and objectives for the plan and review the scope and schedule to ensure a common understanding of the project. This is an excellent opportunity for commanders and other installation personnel to communicate to the planning team their goals for the plan as well as salient issues, problems, and opportunities.

5-7. Review of Submittals.

a. The review of submittals is one of the most important aspects of the planning process. This input is required if the contractor is to be able to prepare a product that is responsive to the installation's needs. It is important that a reviewing body be identified early in the planning process and that this body remain consistent throughout the planning process. It is important also to establish realistic review time frames. This includes the contractor mailing a submittal to be received on the established milestone date, allowing one week for installation review and then conducting an on-site work session to review the submittal. Written review comments from all reviewers should then be summarized by the project manager and returned to the contractor within 14 days of the work session. An exception to this approach might be the initial concept submittal, at which time it might be appropriate for the contractor to conduct a briefing in person to explain the current status of the project at the time of the submittal.

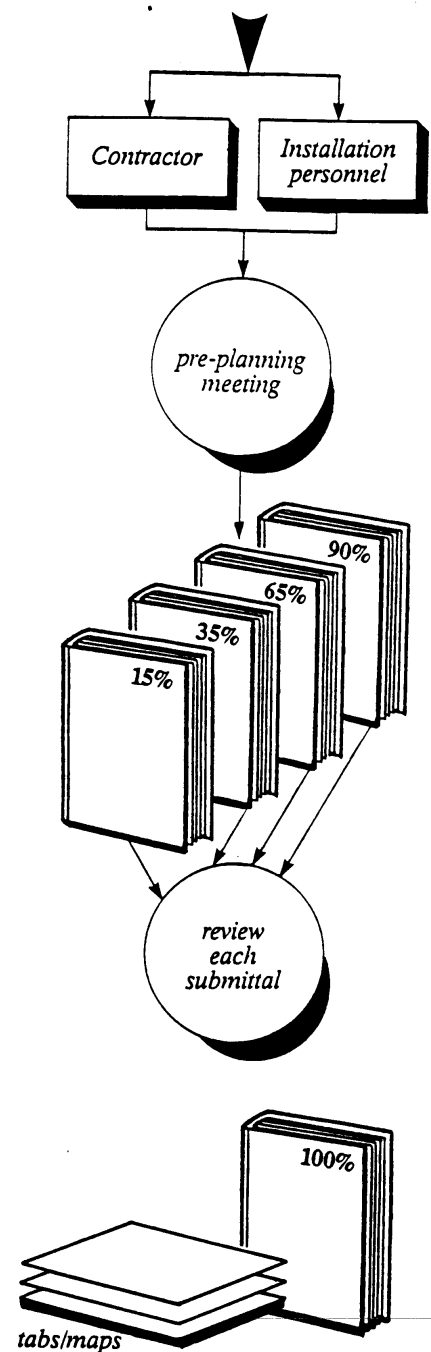


Figure 5-3
Planning process diagram

b. Submittals and reviews are also important in terms of the contract and release of payments; the technical representative must keep the contracting officer informed of the contractor's progress and approve requests for payment in terms of satisfaction of the technical requirements of the contract.

C. HOW TO USE THE STATEMENT OF WORK

5-8. Installation Personnel. The Master Statement of Work for Comprehensive Plans details the requirements for preparing all component plan elements of the comprehensive plan. The master statement of work should be used by installation personnel as a guideline only; it should be read and edited very carefully to fit the individual needs of the installation. The level of effort for each component will vary according to the needs of the installation. The statement of work includes:

***REVISE THE SOW
TO REFLECT UNIQUE
INSTALLATION NEEDS***

- General requirements
 - Definitions
 - Contract management
 - Compliance with applicable regulations
 - Period of performance
 - Services to be provided
 - Contract deliverables
 - Other general requirements
 - Contract options
- Planning process
 - Process
 - User groups and other contacts
 - Special issues to be included in plan
 - Other related studies and plans
 - On-installation planning process
- Plan document
 - Format and outline
 - Plan overview/executive summary
 - Description of component plans
 - Individual component plans
 - Capital improvements program

- Mapping
 - Aerial photography/photogrammetric mapping/ computer graphics
 - Description of deliverable items
 - Target computer graphics system
 - Installation survey/data generation
 - Aerial photography and ground survey
 - Photogrammetric mapping requirements
 - Requirements for utility systems maps
 - Mapping from existing sources
 - Variance for survey, photography and photogrammetric practices
 - Optional aerial photograph deliverables
 - Compliance with applicable professional standards
 - Sample outline of user manual
- Mapping for specific components
- Project management and submittal requirements
 - Project management plan
 - Deliverables
 - Presentations/meetings
 - Review procedures
 - Schedule
- Government-furnished materials, information sources, bibliography

These elements should be determined at the installation level; the master statement of work should be adapted as installation personnel deem necessary. In addition, the installation should revise the sections describing the content of each component plan as necessary to reflect specific conditions or concerns particular to that installation.

5-9. Contractors. The Statement of Work is provided to contractors as an outline of the services to be performed and the products to be delivered to the installation and is the basis for the contractor's fee proposal. The statement of work generally tells contractors what to do; the planning bulletins/manuals tell them how to do it. At the kickoff meeting described in Section 5-6, the project manager and the consultant should discuss in detail the statement of work

and the appropriate planning bulletins/manuals and how they should be adapted or interpreted for conditions at the installation.

5-10. Effective Planning for Each Installation. The series of bulletins/manuals guiding comprehensive planning and the master statement of work are intended only to set the framework for comprehensive planning at each Army and Air Force installation. To be successful, a Plan must:

- Reflect the unique goals, needs and missions of the individual installation. The Statement of Work and processes outlined in these bulletins/manuals must be carefully adapted for use at a particular installation.
- Be developed by and have the support of the entire installation community, from the installation commander through the Engineer through all users, including civilian workers and dependents.

Plans that are developed according to these criteria will guide Army and Air Force installations into the 21st century, helping to achieve mission effectiveness and efficient use of resources and enhance the quality of life for the installation community.

***PLANS GUIDE THE
INSTALLATION
INTO
THE 21ST
CENTURY***

Bibliography

- EDAW, Inc., 1986. Comprehensive Plan: Maxwell Air Force Base, Montgomery, Alabama. Prepared for HQ Air University, December 1986.
- EDAW, Inc., in association with the Ehrenkrantz Group, Flack & Kurtz, Brown and Caldwell, and the CRS Group. 1982. M-X Base Comprehensive Plan, Various Interim Reports. Prepared for USAF Regional Engineer, M-X Environmental Planning Division, April 30, 1981.
- Goodman, William, et al., Principles and Practice of Urban Planning, Fourth edition, International City Managers Association, Washington, D.C., 1968.
- GRW Engineers, Inc., 1983. Fort Rucker Master Plan. Prepared for Mobile District, U.S. Army Corps of Engineers, July, 1983.
- JHK & Associates. 1984. Base Comprehensive Planning: Transportation Planning Bulletin. Prepared for the U.S. Air Force, HQ USAF/LEEVX, August 1984.
- Rogers, Golden & Halpern, 1986. Base Comprehensive Planning: Land Use Planning Bulletin. Prepared for U.S. Air Force, LEEVX, August 1986.
- Rogers, Golden & Halpern, 1987. Land Use Planning: Installation Master Plan. Prepared for Department of the Army, Office of the Chief of Engineers, November 1987.
- Skidmore, Owings & Merrill, 1984. United States Air Force Academy Land Use Plan. A.F.A. Project No. 83-0274. Denver, Colo., December 14, 1984.
- Strunk, William, Jr., and E. B. White, The Elements of Style, Third edition, MacMillan Publishing Co., Inc., New York, 1979.
- U.S. Air Force, Air University. Air Force Institute of Technology, School of Civil Engineering. N.d. Community Planning: Management 520, Course Notes. Wright-Patterson Air Force Base, Ohio.
- U.S. Air Force, HQ USAF/LEEVX. Air Force Regulation 86-4, Base Comprehensive Planning. Washington, D.C.: December 26, 1984.
- U.S. Air Force. 1989. Statement of Work for Preparation of Comprehensive Plan for () Air Force Base, (), February 1989.
- U.S. Army. 1966. TB ENG 353, The Overlay Composite Method of Master Plan Preparation, 30 December 1966 with Change 1, 20 April 1973 and District Supplement Guidance.
- U.S. Army. 1973. TM 5-803-4, Planning of Army Aviation Facilities, October 1973.

U.S. Army. 1986. TM 5-803-1, Installation Master Planning, 13 June 1986.

U.S. Army, Headquarters. 1987. Master Planning for Army Installations. Army Regulation No. 210-20, June 12, 1987.

U.S. Department of Defense, 1981. Installation Design. (Army TM 5-803-5, Navy NAVFAC P-960, Air Force AFM 88-43) March 1, 1981.